

THE HOPE REPORTS

VOL. IX

1911—1913

THE NATURAL HISTORY AND DESCRIPTION
OF AFRICAN INSECTS, ESPECIALLY
THE ACRAEINE BUTTERFLIES

EDITED BY

EDWARD B. POULTON, D.Sc., M.A.

HON. LL.D. PRINCETON, HON. D.Sc. DUNELM., F.R.S., ETC.

HOPE PROFESSOR OF ZOOLOGY IN THE UNIVERSITY OF OXFORD

FELLOW OF JESUS COLLEGE, OXFORD

PRESIDENT OF THE LINNEAN SOCIETY OF LONDON

MEMBRE HONORAIRE DE LA SOCIÉTÉ ENTOMOLOGIQUE DE BELGIQUE

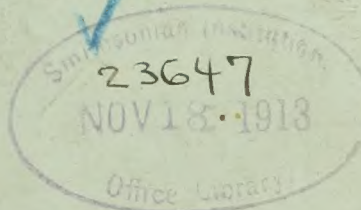
SOCIO HONORÁRIO DE LA REAL SOCIEDAD ESPAÑOLA DE HISTORIA NATURAL

CORRESPONDENT OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA

HONORARY MEMBER OF THE ACADEMY OF SCIENCE, NEW YORK

CORRESPONDING MEMBER OF THE SOCIETY OF NATURAL HISTORY, BOSTON, AND

THE AMERICAN ENTOMOLOGICAL SOCIETY



'Semper Africa novi aliquid apportat'

OXFORD

PRINTED FOR PRIVATE CIRCULATION

BY HORACE HART, PRINTER TO THE UNIVERSITY

1913

12.3.13.



ALFRED ROBINSON, DEL.

THE MAKERS OF THE HOPE DEPARTMENT
OXFORD UNIVERSITY MUSEUM

82
Insects
QL
461
H792
ENT.

THE HOPE REPORTS

VOL. IX

1911—1913

THE NATURAL HISTORY AND DESCRIPTION
OF AFRICAN INSECTS, ESPECIALLY
THE ACRAEINE BUTTERFLIES

EDITED BY

EDWARD B. POULTON, D.Sc., M.A.

HON. LL.D. PRINCETON, HON. D.Sc. DUNELM., F.R.S., ETC.

HOPE PROFESSOR OF ZOOLOGY IN THE UNIVERSITY OF OXFORD

FELLOW OF JESUS COLLEGE, OXFORD

PRESIDENT OF THE LINNEAN SOCIETY OF LONDON

MEMBRE HONORAIRE DE LA SOCIÉTÉ ENTOMOLOGIQUE DE BELGIQUE

SOCIO HONORÁRIO DE LA REAL SOCIEDAD ESPAÑOLA DE HISTORIA NATURAL

CORRESPONDENT OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA

HONORARY MEMBER OF THE ACADEMY OF SCIENCE, NEW YORK

CORRESPONDING MEMBER OF THE SOCIETY OF NATURAL HISTORY, BOSTON, AND
THE AMERICAN ENTOMOLOGICAL SOCIETY



'Semper Africa novi aliquid apportat'

OXFORD

PRINTED FOR PRIVATE CIRCULATION

BY HORACE HART, PRINTER TO THE UNIVERSITY

1913

P R E F A C E

THE appearance in 1912 of Mr. H. Eltringham's splendid monograph on the Acraeine butterflies of Africa (3), occupying 374 pages of the 'Transactions of the Entomological Society', and accompanied by 16 plates, enabled me to repeat the convenient practise of ten years ago, and issue a volume of Reports devoted to African Natural History. Volume III (1903) was in like manner rendered possible by the joint paper of Mr. Guy A. K. Marshall and the Professor, occupying 298 pages of the same Transactions for 1902, and accompanied by 15 plates. It is a further convenience to their respective volumes of Reports that both papers were granted separate indices by the Society.

It has been impossible in the present volume to restrict the whole of the subject-matter to Africa and its islands. Mr. Eltringham's monograph (3) contains a supplement on the few Acraeas known to exist in the Oriental Region, and the late Col. Bingham's second paper (10) contains the description of 5 Australian Aculeate Hymenoptera. These are the only exceptions.

Two other papers are concerned with the African Acraeas—(1) in which Mr. Eltringham describes the forms and distribution of two remarkably variable species, and (4) where Dr. G. D. H. Carpenter gives an account of the extraordinary resemblances between the larvae of certain species in this distasteful group. Another paper (5) by Dr. Carpenter gives the life-history of that wonderful polymorphic mimic of the Acraeas—*Pseudacraea eurytus hobleysi*. The account of this long-hoped-for experiment in breeding

should be read in connexion with the following brief papers in Vol. VIII of these Reports—Contents (35) *f.*, 2 ; (36) *b.*, 5, *e.*, 2, 11, *h.*, 8, *j.*, 5.

Dr. G. B. Longstaff's interesting study of the butterflies of the White Nile and their relationships with the Palaearctic and Ethiopian faunas, occupies (6) and (7), while (8) contains a list of 365 species of butterflies taken (1902-12) between the Rift Valley and the British East African coast, by the Rev. K. St. Aubyn Rogers. The extent of the author's generous assistance to the Department may be inferred from this fine list of his captures. The two last papers (9) and (10), by the late Colonel C. T. Bingham, contain the first part of an extensive monograph on the Ethiopian Hymenoptera Aculeata planned by the author, but unhappily cut short by his lamented death.

EDWARD B. POULTON.

HOPE DEPARTMENT OF ZOOLOGY,
UNIVERSITY MUSEUM, OXFORD,
July 21, 1913.

CONTENTS OF VOL. IX

1. Preface.
2. On the Forms and Geographical Distribution of *Acraea lycoa*, Godt., and *Acraea johnstoni*, Godm., by Harry Eltringham, M.A., New College, Oxford, F.Z.S., F.E.S. (From 'Transactions of the Entomological Society of London', 1911, p. 1.)
3. A Monograph of the African species of the Genus *Acraea*, Fab., with a supplement on those of the Oriental Region, by Harry Eltringham. (Occupies all Part I, pp. 1-374, with Plates I-XVI, of 'Transactions of the Entomological Society of London', 1912.)
4. Synaposematic resemblance between Acraeinae larvae, by G. D. H. Carpenter, B.A., B.M. (Oxon.), F.E.S., Member of the Royal Society's Sleeping Sickness Commission. (From 'Transactions of the Entomological Society of London', 1912, p. 702.) For the reading of the paper, see Hope Reports, vol. viii, Contents (36) g., 6.
5. The Life History of *Pseudacraea eurytus hobleyi*, Neave, by G. D. H. Carpenter. (Ibid., p. 706.) For the reading, see vol. viii, Contents (36) h., 8 and j., 5.
6. Three Weeks in the Sudân, by G. B. Longstaff, D.M., New College, Oxford, F.R.C.P., &c. (From 'Entomologist's Monthly Magazine', 1911, Second Series, vol. xxii, pp. 119 and 194.)
7. The Butterflies of the White Nile: a Study in Geographical Distribution, by G. B. Longstaff. (From the 'Transactions of the Entomological Society of London', 1913, p. 11.) For the reading, see vol. viii, Contents (36) i., 3.
8. A List of Butterflies collected during the last ten years in British East Africa, by the Rev. K. St. Aubyn Rogers, M.A., Wadham College, Oxford, F.E.S. (From the 'Entomologist's Monthly Magazine', 1913, Second Series, vol. xxiv, pp. 45, 94, and 127.)
9. South African Aculeate Hymenoptera in the Oxford Museum, by the late Col. C. T. Bingham, F.Z.S., with an Introduction by the Professor. (From 'Transactions of the Entomological Society of London', 1911, p. 528.)
10. South African and Australian Aculeate Hymenoptera in the Oxford Museum, by the late Col. C. T. Bingham, F.Z.S. (Ibid., 1912, p. 375.)

TRANSACTIONS
OF THE
ENTOMOLOGICAL SOCIETY
OF
LONDON
FOR THE YEAR 1911.

- I. *On the Forms and Geographical Distribution of Acraea lycoa, Godt., and Acraea johnstoni, Godm.* By HARRY ELTRINGHAM, M.A., F.Z.S.

[Read June 1st, 1910.]

PLATES I, II.

At a meeting of this Society on June 6th, 1906, a paper was read by Professor Poulton, in part dealing with the mimetic forms of *Acraea johnstoni*, Godm.* In this paper the author sought to show that judging from the outward characteristics, *Acraea lycoa* of West Africa gradually merged by intermediate gradations into *Acraea johnstoni* of the east and south, the subject being considered with special reference to the remarkable series of mimetic modifications presented by the latter species. The final conclusion then attained emphasised the extreme probability that the whole series of forms then associated under the names of *A. johnstoni*, *A. proteina*, etc., must be regarded as specifically identical with *Acraea lycoa*.

In order that the true affinities of this complicated association may be more accurately established, I have, at Professor Poulton's suggestion, undertaken a microscopical examination of the minute structure of the forms. I have examined the whole of the material in the Hope

* "Mimetic Forms of *Papilio dardanus* (*merope*) and *Acraea johnstoni*," E. B. Poulton. Trans. Ent. Soc., p. 281 et seq., 1906.

Department, the National Collection, and the Tring Museum, comprising some hundreds of examples, and have made a large number of microscopical preparations, with results which it is the purpose of the present paper to describe.

As a preliminary it seems desirable to give some account of the known forms and the present state of their synonymy.

ACRAEA LYCOA.

Acræa lycoa was described by Godart in 1819 (Enc. Meth.) from a female example, and the author stated that it was not known whether the sexes were alike. The first reference I can find to the male is in Staudinger's "Exotische Schmetterlinge," where the difference between the sexes is mentioned. Fig. 2 on Plate I shows the typical western female drawn from an example received from Sierra Leone, whilst fig. 1 shows a male from Oguta, Nigeria. In the female the depth and richness of the ground-colour varies somewhat, though it is in practically every case paler than in more eastern forms. The male is frequently semi-transparent, and the forewing spots may be only very faintly discerned. Examples from Accra and Nigeria present no distinct modifications from the extreme western forms. The first recognisable change is observable in males from Fernando Po. These resemble fig. 1, but the spots on the forewings are now quite distinct, and of the same pale reddish colour as the discal area of the hindwings, and the whole ground-colour is somewhat darker. The females are still like fig. 2, but with darker ground-colour. These forms persist over a large area, extending without marked variation from Fernando Po, through the French Congo, and across the Congo State to Toro in S.W. Uganda. At Toro several varieties may be found, since it is here that three geographical races appear to meet. From this point the species spreads north and south. Between Lake Victoria Nyanza and Lake Kivu (Mt. Niragonwe) the males resemble fig. 3, whilst fig. 4 shows a female from the same locality. To the north of Toro in the Unyoro Region the male is modified in a somewhat different manner. As fig. 5 shows, the forewing spots have become much smaller and more clearly defined, though there is much less development of the hindwing patch than in the

Niragonwe specimens. This form of the male is very typical of Western Uganda. The females are not, however, distinguishable from those of the more southern Urundi District, all being characterised by the extreme paleness of the hindwing patch. Passing round the north shore of Lake V. Nyanza and on towards the south to the Tiriki Hills this hindwing patch becomes more distinctly yellow, whilst the males have developed the same feature, accompanied by a darker ground-colour and greater distinctness and depth of colour in the forewing spots. The male of this region is shown at fig. 6. Passing southwards and eastwards we find at Kilimanjaro the two sexes present much the same pattern, but the ground-colour in both sexes is now very dark, the forewing spots in the female are smaller, and the hindwing patch is slightly expanded again. The sexual dimorphism is still well marked. Fig. 7 shows a female of this form which is equivalent to the "*Planema*" *fallax* of Rogenhofer, and the *Acraea kilimandjara* of Oberthür. The species has developed to its maximum extent in mimetic approach to *Amauris echeria* and *A. albimaculata*. Northwards, in the district of Mt. Kenia, examples still resemble *fallax*, but in several specimens the hindwing patch has a slightly edentate distal outline between the third median and the radial, giving the insect a marked resemblance to *A. johnstoni* f. *confusa*. In two males from this district the forewing spots are distinctly paler than the hindwing patch, and up to this point in the geographical range of the species this is the only sign of departure from a hitherto consistent sexual dimorphism. This Kenia form resembles fig. 7 on the upperside with the exception of the slight difference in the hindwing patch, but the insect is generally somewhat smaller. I have figured it in monochrome on Plate II, fig. 7. On the underside the difference is more marked. In *fallax* the ground-colour of the forewings is dark sepia from the base to the inner side of the white subapical spots, the whole apical area being dusted with pale ochreous. In the Kenia form the dark colour extends beyond the first three subapical spots, and the whole of the underside has a generally blacker appearance than in *fallax*. These forms are of exceptional interest, and are amongst the many valuable specimens for which the Hope Department is indebted to the generosity of the Rev. K. St. A. Rogers and Mr. and

Mrs. S. L. Hinde. The species further extends northwards into Abyssinia, and there we find that both sexes are alike, not having, as the Kenia specimens might lead us to expect, white forewing spots, but having all the lighter markings dark ochreous. This form is the subspecies *A. lycoa aequalis* of Rothschild and Jordan, represented at figs. 8 and 9. It is worthy of note that the Abyssinian form *steckeri* of *A. echeria* is specially characterised by dark ochreous markings and an entire absence of white spots. It is doubtless in mimicry of this form that the female *lycoa* of this region has lost its white markings.

With regard to the existing nomenclature of the above forms, the *lycoa* of Godart applies to the species throughout its range until we arrive at Entebbe, and from thence eastward and southward the forms approach more and more closely to the *fallax* of Rogenhofer, which is identical with Oberthür's *kilimandjara*. In his catalogue of the African Rhopalocera Aurivillius makes the queried suggestion that *fallax* may be a form of *johnstoni*, but this I hope to show is an incorrect surmise. The same author refers to an example described as a variety of *lycoa* by Butler, and names it ab. *butleri*. The supposed identity of this variety with *lycoa* must be regarded as an error. From an examination of the specimen there can be no doubt that it is a female example of the form subsequently described by Grose-Smith as *Acraea toruna*, the position of which will be considered later.

ACRAEA JOHNSTONI.

Acraea johnstoni was first described by Godman in 1885 (P.Z.S., p. 537) from a male example, and the type agrees with the form subsequently described by Oberthür as *Acraea proteina semifulvescens*. Now that long series of the forms of *A. johnstoni* are available, it is seen to be somewhat regrettable that this form should have acquired the position of the type, since it is in reality a rather rare variety. In 1889 Butler described an *Acraea*, which he assigned to the type of *Acraea johnstoni* as its female, and this arrangement was confirmed by Dr. Holland in 1893 (Ann. Nat. Hist., p. 248). In 1891 Rogenhofer described his "*Planema*" *telekiana*, which, however, is only a form modified but slightly from Godman's type of the male *johnstoni*. The hindwing patch is somewhat

tawny in *telekiana*, whilst it is whitish in the male type of *johnstoni*. The same author described at the same time "*Planema*" *confusa* and "*Planema*" *fallax*. The latter has already been referred to in connection with *lycoa*. *Planema confusa* is described by Rogenhofer as the male of Butler's type female. In Baumann's "Usambara" (supplement) it is stated that both the male and female were taken. No difference is specified, and the figure subsequently published is stated in the text to be that of a female, though the description facing the plate states it to be a male. In 1893 M. Oberthür described a number of forms under the name of *Acraea proteina*, the type of which appears to be a male,* and resembles the insect previously described by Butler as the type female of *johnstoni*, and is also similar to Rogenhofer's *confusa*. The four varieties described by Oberthür are (1) *proteina flavescens*, which appears to be an ordinary yellow-spotted example of the commonest form of *johnstoni*; (2) *proteina semialbescens*, sex not stated, an example of which in the National Collection has white spots on the forewing, and tawny hindwings marked with dark inter-nervular rays and exhibiting no trace on the upperside of the quadrate patch, though the latter is clearly outlined on the underside; (3) *proteina semifulvescens*, sex not stated, a form which agrees with Godman's male type; (4) *proteina fulvescens*, a form which has nearly lost the spots in the forewing and the patch in the secondaries, though they are more obvious on the underside, and all four wings are tawny. It is the peculiar variety which appears to have developed in a mimetic direction synaposematic with *Danaida chrysippus* f. *dorippus* and *Acraea encedon* f. *daira*.

The next published reference occurs in Butler's note on the forms in Proc. Zool. Soc., p. 113, 1896. Butler was unaware that the pattern of Godman's male type also occurs in the female sex, and therefore he regarded Godman's type and his own female type as constituting a sexually dimorphic variety. He describes Oberthür's *fulvescens* as synonymous with Rogenhofer's *telekiana*, whereas the latter is practically the same as Godman's male type, and further he

* Butler appears to have thought that Oberthür's *proteina* was a female. Though the sex of the specimen figured is not definitely given as male, the author states, after describing it, that his collection contains three males, quite similar to one another. I cannot take this to mean otherwise than that the example figured is one of the three males in question.

makes Oberthür's *flavescens* synonymous with the same author's *kilimandjara*, Rogenhofer's *confusa* and *fallax*, and Karsch's *octobalia*. The latter appears to be an aberration of *johnstoni*, in which the yellow spots are ringed with a darker colour.

I have lately examined in the British Museum a very curious example of *johnstoni* from Kilimanjaro. It resembles the *fallax* form of *lycoa* so closely that I hesitated to decide its identity from the external features alone. Mr. Heron kindly allowed me to examine the genitalia, and it proved to be *johnstoni* as above indicated. The quadrate appearance of the hindwing patch is almost lost on the upperside, though rather more developed beneath. Placed side by side with the forms of *lycoa* from Kenia above described, the two species would certainly be difficult to distinguish.

The last form of *johnstoni* which I have seen described is the *Acraea toruna* of Grose-Smith. It presents certain peculiar features, and will be considered apart from the other forms.

I have endeavoured throughout the foregoing somewhat tedious explanation to distinguish between forms which appertain to *lycoa* and those which are conspecific with *johnstoni*, because, as the result of my investigation, I am convinced that *lycoa* and *johnstoni* are separate species, and remain so throughout the length of their geographical range. That of *lycoa* has already been outlined. *Acraea johnstoni* occurs in the Tiriki Hills and extends as far south as Chirinda in S.E. Rhodesia. In this latter locality all the examples I have seen, some twenty in number, are of the *confusa* form (including *flavescens*). The spots and hindwing patch vary from yellow to white. In some cases the specimens have all white markings. Plate I, fig. 15, shows a female from this region.*

* Since the above was written I have had an opportunity of examining a fine series of *Acraea johnstoni* taken in Nyassaland by Mr. S. A. Neave. There are forty-five of the *confusa* form, varying from yellow to white spotted, the only combination not represented being white hindwing patch and yellow forewing spots. One example has white forewing spots and dark yellow hindwing patch (= *semi-albescens*). There are, in addition, four examples of a peculiar form of *semifulvescens* in which the forewing spots are not obsolescent as is usual in this form, but are as white and distinct as in *confusa*. The examples are all males. They have a striking appearance and form an interesting connecting link between *confusa* and *semifulvescens*.

The specific identity of all the forms of *A. johnstoni* would, I think, with the exception of the *toruna* form, be quite satisfactorily established on the external features, but apart from my own examination of the genitalia, we have still further direct proof. In the Tring Museum there is a family of *A. johnstoni* bred from ova at Nguelo, Usambara. To which variety the parent belonged I have been unable to ascertain, but the nine offspring consist of the following:—

Three examples of the type form (= *semifulvescens*), two males and one female. The latter is shown at Plate I, fig. 12. The males are slightly smaller, and have the hindwing patch very faintly ochreous, and one has the forewing spots much paler.

Four examples of the *fulvescens* form, two males and two females. One of the latter is shown at Plate I, fig. 11. The males resemble this female, but the remaining female is somewhat intermediate, having the spots paler, and a considerable powdering of black scales at the base of the wings and about the inner angle of the hindwings.

One black and white female shown at Plate I, fig. 13. This form occurs very commonly at Chirinda, and I have also seen a similar specimen from Mombasa.

One male shown at Plate I, fig. 14. This example is nearest to the commonest variety of the species (= *confusa*).

ACRAEA TORUNA, Grose-Smith.

We may now consider the position of *Acraea toruna* in relation to the foregoing species. The ground-colour, especially in the forewings, is more profoundly modified than in any of the other forms. Whilst the present position of the forewing spots may be traced from *johnstoni* f. *confusa* through the typical male *johnstoni*, the distal outline of the hindwing patch is much less angulated than in other *johnstoni* forms, at least on the upperside, a fact doubtless due to the close approximation of its pattern to that of its model *Planema latifasciata*. One feature stands out prominently, the palpi are nearly always entirely black,* whereas in all the forms of *johnstoni*

* I have to thank my friend, Mr. F. A. Heron, for first calling my attention to this feature. It is interesting to note that the genus *Planema* is distinguished by the possession of black palpi, though there is also in that genus a white lateral streak.

and *lycoa*, and in fact in all other African *Acraeas* which I have examined the palpi are yellow beneath. I have examined three interesting examples of *toruna* in the Tring Museum taken near Bukoba, between Lakes Kivu and Victoria Nyanza. In one of these the hindwing patch is pure white and the palpi have numerous yellow scales beneath, thus providing a transitional form from *semifulvescens*. The second of these specimens is very abnormal, and has the ground-colour of the wings brownish black with just a slight suffusion of the characteristic reddish chocolate colour in the neighbourhood of the distal end of the forewing cell. The hindwing patch is white, and bears on the upperside hardly a trace of the quadrate distal outline. The third is of the normal colouring, but the forewing spots are very much reduced in size, that between the first and second median being represented by a mere streak, and the subapical band of spots is only about a quarter of the usual width. All these examples are males. The second specimen above described has decidedly the appearance of a form intermediate between *toruna* and a female *lycoa*, and in the absence of an examination of the genitalia would provide a strong temptation to be regarded as a connecting link between the two species.

As will presently be described the male genital armature of *toruna* presents no features by which that variety can be distinguished from the other forms of *johnstoni*, and I am satisfied that *toruna* is merely a geographical race or subspecies of *A. johnstoni*.

THE DISTINCTION BETWEEN *A. lycoa* AND *A. johnstoni*.

It now remains for me to give some account of the features which lead me to assign all the forms of *A. lycoa* and *A. johnstoni* to two distinct species, albeit including certain subspecies or geographical races. In the first place *A. lycoa* is sexually dimorphic, and remains so throughout its range with the exception of the peculiar Abyssinian subspecies. In *A. johnstoni* all the numerous varieties occur in both sexes. The modifications of pattern which take place in *lycoa* as we pass from west to east tend in one definite direction only, viz. away from the resemblance to western black and white *Planema* and *Amauris* models and towards a superficial resemblance to the eastern and southern Danaines *Amauris*

echeria and *A. albinaculata*, together with a synaposematic approach to the *confusa* form of *A. johnstoni*, especially developed at Kilimanjaro and on the Kikuyu Escarpment. Throughout its range and variations *lycoa* presents a pale discal area in the hindwing, which, though varying from white to yellow and showing a very ill-defined outline in males from the extreme west, nevertheless has, except in some examples of the *fallax* and Mount Kenia forms, a well-rounded distal outline. In *lycoa* the basal spots of the hindwing underside are almost always smaller and less confluent than in *johnstoni*, though this feature is somewhat variable. A careful examination of the neurulation in *lycoa* and *johnstoni*, shows the following differences (see Plate II, figs. 4 and 5). In the forewing of the former, the lower discocellular nervule is nearly always rather shorter and lies in a more nearly transverse direction than in *johnstoni*. This feature is also subject to slight variation. The hindwing cell presents a difference in the two species, and owing to the pale colour of the scales in this area the difference can be more readily seen. In *lycoa* the cell has a generally broader and shorter appearance than in *johnstoni*. This effect is produced to a great extent by the fact that the middle discocellular nervule is outwardly more deeply concave in the latter than in the former. This feature is fairly constant, and is quite evident in the examples from Kenia referred to above. The most conclusive test of specific distinction is, however, to be found in the structure of the male genital armature. I have made a large number of preparations from examples occurring throughout the range of the two species and from the different varieties, and have also examined many others not actually dissected out and mounted. The accompanying plate gives outlines of the neurulation, and also drawings of the male genitalia of *lycoa*, *johnstoni*, and *toruna*. Fig. 1 shows the appearance of the first, and fig. 2 that of the second. The claspers are for the most part shorter and stouter in *lycoa* than in *johnstoni*. The penis is comparatively short, frequently showing a kind of bilobed structure, and is not a continuous tube, but is widely grooved towards its extremity. The uncus is comparatively very short, obtusely pointed, and bears a small process on each side. In *johnstoni* the penis is long and slender, it does not show a bilobed structure, and though it is grooved like that of *lycoa*, the

walls are less widely separated. It is in the uncus, however, that the greatest difference is shown. It is produced dorsally into a long curved extremity, somewhat hollowed beneath, and slightly widened laterally at its termination. Whilst all the forms of *lycoa* from its western type to its most extreme modification in the Abyssinian subspecies present no noticeable change in the structure of these organs, so all the forms of *johnstoni*, from the typical male to *confusa* and *fulvescens*, and the subspecies *toruna*, show the same form in the male genitalia, especially characterised by the extremely long uncus and slender penis. That these features are of specific value I have no doubt, since I have also made preparations of the genitalia of other nearly allied *Acracas*, and find that they present features which I need not here specify further than to say that they are entirely different and characteristic.

The male genitalia of the *toruna* form shown at fig. 3 afford little or no distinction from those of *johnstoni*. The claspers appear to be more distinctly lobed, but this is a variable feature, and is found more or less developed in some examples both of *lycoa* and *johnstoni*. The details of the articulation of the claspers with the vinculum are apparently rather different, though this point is not at all reliable in a microscopic specimen, as the appearance often varies with the point of view. The penis certainly exhibits a similar formation to that of *johnstoni*, and differs in the same degree from that of *lycoa*. The uncus is similar to that of *johnstoni*. There can be no doubt that *toruna* is as distinct from *lycoa* as is *johnstoni*, and further, that so far as the genitalia are concerned, it is indistinguishable from other forms of *johnstoni*. It appears to be rare, and is certainly a local form, and, as already stated, I think it must be regarded as a geographical race or subspecies of *johnstoni*.

Finally, we are now acquainted with the larvae both of *A. lycoa* and *A. johnstoni*, and it will be of interest here to compare them.

The larva of *A. lycoa* is figured by Aurivillius (Ent. Tidskr., Plate 5, fig. 2, 1893), and is thus described:—

“The larva is yellowish without markings, with black head and black spines. The thorns are scarcely as long as the diameter of the body.” The figure shows the larva as having all the spines black, including those of the sub-lateral row, whilst the body has no rings or markings of any

kind. From a preserved specimen in the Tring Museum the larva of *A. johnstoni* may be described as follows:—

Body yellowish beneath and brownish black above, each segment with a ring of yellowish white, edged with brown and divided in the middle by a dark brown line widened somewhat at the base of each of the papillae which carry the spines. Head black, and the first and last three segments ventrally somewhat darker than the remainder. Twenty-four dorsal black spines arranged in a double row. Eleven lateral spines on each side, the last two projecting backwards. Eight sublateral *yellow* spines on each side, the first pair arising from the fourth segment (Plate II, fig. 6).

The principal differences distinguishing this larva from that of *lycoa* are the dark-coloured dorsal area, the alternation of dark and light rings and the colour of the sublateral row of spines.

SYNONYMY OF THE FORMS OF *A. lycoa* AND *A. johnstoni*.

Having now established the specific differences between *A. lycoa* and *A. johnstoni* it remains to arrange the various forms in accordance with the facts enumerated. The varieties of *A. lycoa* fall naturally into several geographical races or subspecies, and it will therefore be convenient to give them subspecific names. In the case of *Acraea johnstoni* only one such geographical distinction can be clearly discerned, viz. that of the variety *toruna*. Since the form of *A. johnstoni* which must be taken as the type (= *semifulvenscens*, Oberth.) occurs in both sexes, I would suggest that for the sake of uniformity, and without implying the slightest discourtesy to Mr. Butler, that the latter's female should be assigned to Rogenhofer's *confusa*. The *flavescens* and *semialbescens* of Oberthür are not conveniently distinguishable from his *proteina* and Rogenhofer's *confusa*. Oberthür describes the forewing spots in *proteina* as white or pale yellow, in *flavescens* as yellow, and in *semialbescens* as white. All these variations may be observed in long series, such as those from the Chirinda District collected by Mr. C. F. M. Swynnerton and Mr. G. A. K. Marshall. In this neighbourhood all the examples of *johnstoni* appear to be of the *confusa* form, whereas the latter occurs in company with the type

(= *semifulvescens*) and also with *fulvescens* at Kilimanjaro. Although at Chirinda *johnstoni* does not appear to produce some of the varieties which occur elsewhere, and as suggested by Prof. Poulton, appears to be influenced in its pattern by *A. lobengula*, I can find no constant features which would justify the separation of these southern forms as a geographical race. I therefore suggest the following synonymy for the two species under consideration :—

ACRAEA LYCOA, Godart.

Type : *Acraea lycoa lycoa*.

Godt., Enc. Meth. 9, p. 239 (1819); Staudinger, Exot. Schmett. 1, p. 85 (1885); Dewitz, Ent. Nachr., p. 104 (1889); Aurivillius, Rhop. Aeth., p. 115 (1898); Poulton, Trans. Ent. Soc., p. 305 (1906); Eltringham, Af. Mim. Butt., p. 47 (1910).

Sierra Leone to Nigeria. Plate I, fig. 1, ♂; fig. 2, ♀.

lycoa media, Subsp. nov.

Fernando Po to Toro.

= *lycoa*, Auriv., Ent. Tidskr., 14, p. 277 (1893).

Male distinguished by the clearer definition of the spots in the forewings, and the somewhat richer ground-colour. The female has a darker ground-colour and slightly smaller and more distinctly outlined hindwing patch.

lycoa bukoba, Subsp. nov.

Urundi Country between L. Tanganyika and L. V. Nyanza.

Male with dark ground-colour. Forewing spots medium size and ochreous. Hindwing patch ill-defined and ochreous. Female with dark ground-colour, forewing spots well defined. Hindwing patch very faintly yellow.

Plate I, fig. 3, ♂; fig. 4, ♀.

lycoa entebbia, Subsp. nov.

W. Uganda, Unyoro, Entebbe.

Male smoky grey. Forewing spots much reduced in size. Hindwing patch but little developed. Female with dark ground-colour. Forewing spots smaller and more distinct than in previous subspecies. Hindwing patch small and very faintly yellow.

Plate I, fig. 5, ♂. (Female resembles fig. 4.)

lycoa tirika, Subsp. nov.

Eastern Shore of L. V. Nyanza, Tiriki Hills.

Male resembles previous form, but forewing spots smaller and hindwing patch more distinctly developed. Female with very dark ground-colour, forewing spots small and very distinct. Hindwing patch very small and distinctly yellow.

Plate I, fig. 6, ♂.

lycoa fallax, Subsp.

Mt. Kilimanjaro.

Rogenhofer (*Planema*), Ann. d. k.k. Natur-hist. Hofmus. Wien 6, p. 459, Plate 15, fig. 6 (1891); Butler, Proc. Zool. Soc., p. 113 (1896); Auriv., Rhop. Aeth., p. 115 (1898); Poulton, Trans. Ent. Soc., p. 305, Plate 21, figs. 1a, 2a (1906); Eltr., Af. Mim. Butt., p. 47, Plate III, figs. 24, 25 (1910).

= *kilimandjara*, Oberth., Etud. d'Ent. 17, p. 26, Plate 2, fig. 17 (1893); Butler, *l. c.* (1896); Poulton, *l. c.* (1906).

Plate I, fig. 7, ♀.

lycoa kenia, Subsp. nov.

Mount Kenia, Kikuyu Escarpment.

Both sexes smaller than in other forms. Ground-colour nearly black. Hindwing patch slightly edentate between third median and radial nervules. Dark areas on underside smoky black. Male with spots and hindwing patch lemon ochreous. Female hindwing patch lemon ochreous. Forewing spots white.

Plate II, fig. 7.

lycoa aequalis, Subsp.

Abyssinia.

Roth. and Jord. Novit. Zool. XII, p. 184 (1905). .

Sexes similar. Pale areas dull ochreous.

Plate I, fig. 8, ♀; fig. 9, ♂.

ACRAEA JOHNSTONI.*

Type: *johnstoni johnstoni*.

Godman, Proc. Zool. Soc., p. 537 (1885); Holland, Ann.

* I have followed the usual course in maintaining the first described form as the type, though in this case the form in question

Nat. Hist., p. 248 (1893); Butler, Proc. Zool. Soc., p. 113 (1896); Aurivillius, Rhop. Aeth., p. 114 (1898); Poulton, Trans. Ent. Soc., p. 300 (1906); Eltringham, Af. Mim. Butt., p. 47 (1910).

= *Planema telekiana*, Rogenhofer, Ann. d. k.k. Naturhist., Hofmus. Wien, p. 459, Plate 15, fig. 4 (1891).

= *Acraca proteina semifulvescens*, Oberthür, Etud. d'Ent., 17, p. 26, Plate 2, fig. 21 (1893); Butler, Proc. Zool. Soc. p. 113 (1896); Poulton, Trans. Ent. Soc., p. 302; Plate 22, fig. 2a; Plate 21, fig. 3a (1906); Eltr., Af. Mim. Butt., p. 47, Plate 8, fig. 13 (1910).

Plate I, fig. 12, ♀.

Kilimanjaro, Meru, Usambara, Taveta.

johnstoni, f. *confusa*.

Rogenhof. in Baumann. "Usambara," Suppl., p. 326 (1891), and Ann. d. k.k. Naturhist. Hofmus. Wien, p. 459, Plate 15, fig. 5 (1891).

= *johnstoni*, ♀, Butler, Proc. Zool. Soc., p. 91 (1888).

= *proteina*, Oberth., Etud. d'Ent., 17, p. 29, Plate 2, fig. 14 (1893).

= *proteina flavescens*, Oberth. l. c., p. 26, Plate 1, fig. 4 (1893).

= *proteina semialbescens*, Oberth., l. c., Plate 3, fig. 29 (1893).

Plate I, figs. 13, ♀; 14, ♂; 15, ♀.

Nyassaland, Usambara, Taita, Taveta, Tiriki Hills, Entebbe, Kilimanjaro, Chirinda, Kikuyu, Nguelo.

johnstoni, f. *fulvescens* (= *proteina fulvescens*).

Oberthür, l. c., p. 26, Plate 2, fig. 21 (1893); Poulton, Trans. Ent. Soc., p. 304, Plate 21, fig. 4a (1906); Eltr., Af. Mim. Butt., p. 47, Plate 3, fig. 26 (1910).

Plate I, fig. 11, ♂.

Taita, Kilimanjaro, Nguelo.

is a comparatively rare variety and there can be little doubt that *confusa* is the ancestral form, and that systematically speaking this form should be the type. In cases of this kind it would, I think, be a great advantage if there were some agreement amongst naturalists by which the commonest form of a variable species might be allowed to take the place of the type in spite of its later discovery.

johnstoni ab. *octobalia*.

Karsch, Ent. Nachr., 20, p. 222 (1894), Mpwapwa.

johnstoni, Subsp. *toruna*.

Grose-Smith, Pt. 57, *Acraca*, Plate 8, fig. 1 (1901);
Poulton, Trans. Ent. Soc., p. 303, Plate 22, fig. 3a
(1906); Eltr., Afr. Mim. Butt., p. 47, Plate 3, fig. 28
(1910).

= *lycoa*, ♀, var. Butler, Proc. Zool. Soc., p. 731 (1895).

= *lycoa* ab. *butleri*, Auriv. Rhop. Aeth., p. 115 (1898).

Plate I, fig. 10, ♀.

Toro, Urundi.

I have to thank Prof. Poulton for kindly allowing me to make use of the material in the Hope Department for the purpose of this investigation, and also for much kind help. I am also indebted to Mr. F. A. Heron for kindly furnishing me with sketches and other information, and to Dr. Karl Jordan for permission to examine and prepare figures from the material in the Tring Museum.

EXPLANATION OF PLATES I, II.

[See *Explanation* facing the PLATES.]

EXPLANATION OF PLATES.

PLATE I.

- FIG. 1. *Acraea lycoa lycoa* ♂. Oguta, Nigeria. (Tring.)
 2. " " " ♀. Sierra Leone. (Hope Dept.)
 3. " " *bukoba* ♂. Urundi District. (Tring.)
 4. " " " ♀. " " "
 5. " " *entebbia* ♂. Monyouyo, Unyora. (Tring.)
 6. " " *tirika* ♂. Tiriki Hills. (Hope Dept.)
 7. " " *fallax* ♀. Kilimanjaro. " "
 8. " " *aequalis* ♀. Banka, Malo, Abyssinia.
 (Tring.)
 9. *Acraea lycoa aequalis* ♂. Dareta Mts., Abyssinia (Tring.)
 10. *Acraea johnstoni toruna* ♀. Mt. Niragonwe. (Tring.)
 11. " " *f. fulvescens* ♂. Nguelo, Usambara. Bred.
 (Tring.)
 12. *Acraea johnstoni johnstoni* ♀. Nguelo, Usambara. Bred.
 (Tring.)
 13. *Acraea johnstoni f. confusa* ♀. Nguelo, Usambara. Bred.
 (Tring.)
 14. *Acraea johnstoni f. confusa* ♂. Nguelo, Usambara. Bred.
 (Tring.)
 15. *Acraea johnstoni f. confusa* ♀. Chirinda. (Hope Dept.)

PLATE II.

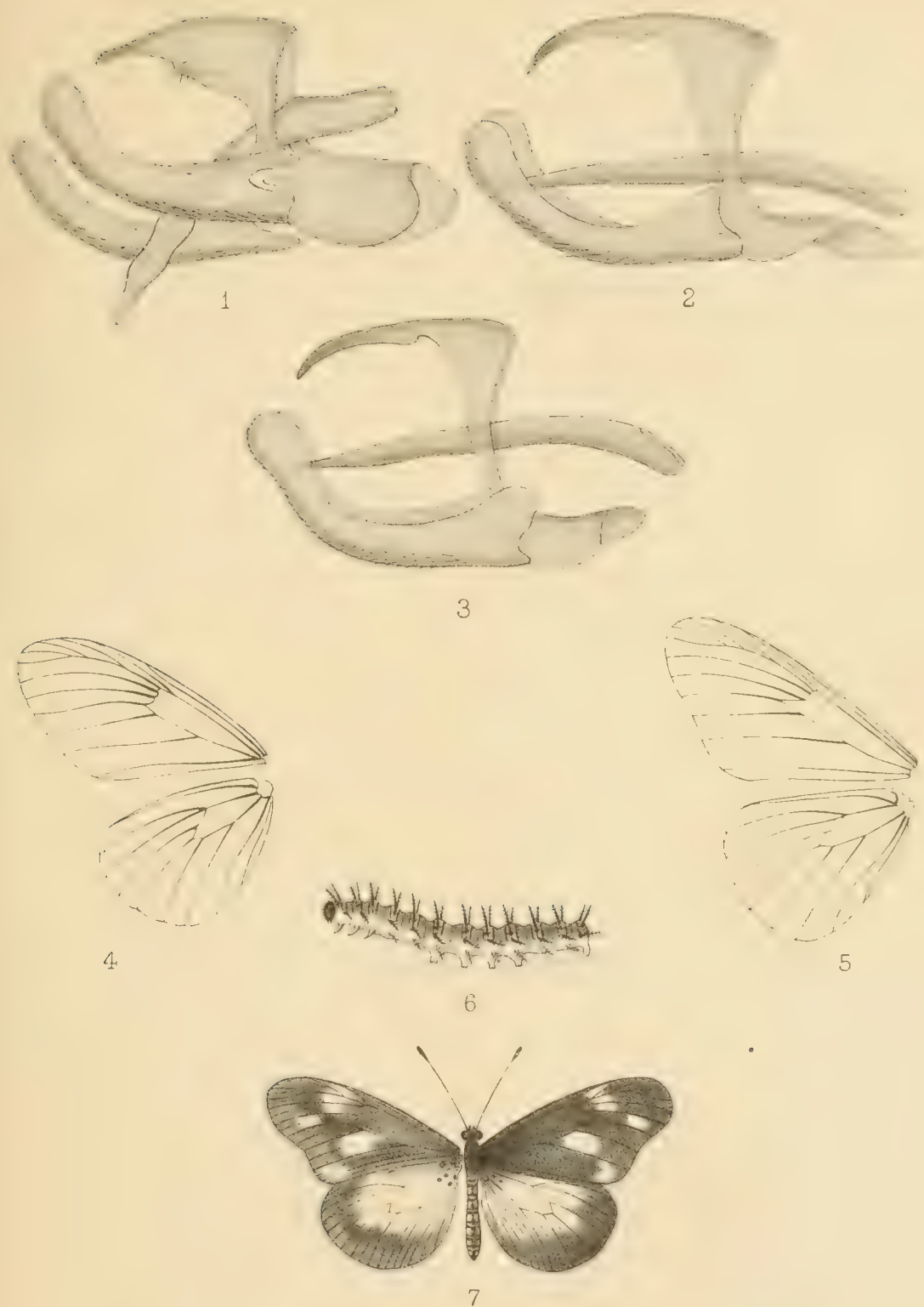
- FIG. 1. Male Genital Armature of *Acraea lycoa*.
 2. " " " " *johnstoni*.
 3. " " " " " *toruna*.
 4. Neuration in *Acraea lycoa*.
 5. " " *johnstoni*.
 6. Larva of *Acraea johnstoni*.
 7. *Acraea lycoa kenia* ♂. Ngondo R., Kikuyu. (Ground-colour brownish black, spots and hindwing patch lemon ochreous.)



H. Eltringham del

West, Newman chr

FORMS OF *A. LYCOA* AND *A. JOHNSTONI*.



H. Eltringham del.

West, Newman lith.

A. LYCOA AND A. JOHNSTONI.

A MONOGRAPH

OF THE

AFRICAN SPECIES OF THE GENUS

ACRAEA

WITH A SUPPLEMENT ON THE

SYNONYMY OF THE ORIENTAL FORMS

BY

HARRY ELTRINGHAM, M.A., F.E.S., F.Z.S.

.

PRINTED FOR

THE ENTOMOLOGICAL SOCIETY OF LONDON

1912

ADDITIONS AND CORRECTIONS

Page 57, line 20. *Add* Aurivillius, Rhop. Aeth., p. 86 (1898).

Page 94. Under f. *urungensis* read GERMAN E. AFRICA (Kitungulu, Urungu).

Page 129. *For* MAHAKATA R. *read* (Mahakata R.).

Page 129. Under *A. nohara punctellata* read NYASSALAND (Angoniland, Zomba).

Page 154, line 3. *Read* TANGANYIKA; N. RHODESIA: CONGO (Katanga); NYASSALAND (Zomba); GERMAN E. AFRICA.

Page 169, line 13. Lowombwa *is usually spelt* Luwumbu.

Page 169, line 28. Witu *should be under* BRITISH E. AFRICA.

Page 327, line 34. *For* Kisuma *read* Kisumu.

Plate 10, f. 9. *For* *ambiga* *read* *ambigua*.

Plate 12, f. 5. *For* *oncea* *read* *oncaea*.

TRANSACTIONS
OF THE
ENTOMOLOGICAL SOCIETY
OF
LONDON
FOR THE YEAR 1912.

I. *A Monograph of the African species of the Genus
Acraea, Fab., with a supplement on those of the Oriental
Region.* By HARRY ELTRINGHAM, M.A., F.Z.S.

[Read November 1st, 1911]

PLATES I—XVI.

INTRODUCTION.

IN the study of biological problems, it is of the utmost importance that adequate information should be available in regard to the affinities, variability, and geographical distribution of the forms of life which may be useful as material for such investigations. A mere list of described "species," without any more intimate knowledge of the inter-relationships of the forms so designated, can be but of small service as a storehouse of reference, just as a collection of specimens, however extensive, unless accurately labelled with essential data, can furnish little more than an exhibition of the beautiful or curious in nature. The older naturalists, secure in the comfortable belief in the fixity of species, occupied themselves with the compilation of voluminous catalogues of all the forms then known to them, the result being a mere list of names, which in too many cases leave considerable doubt as to the identity of the forms to which they are assigned. The necessity for specialisation having once been realised, no facts concerning the creatures studied are

TRANS. ENT. SOC. LOND. 1912.—PART I. (JULY) B

now deemed too small or unimportant to be worthy of record. We aim at minute and careful classification, and though such classification is an artificial process of segregation having convenience as its aim, it is based on natural features, the study of which reveals those very facts which can enlarge our knowledge of nature's methods. Such considerations indicate the desirability of carefully compiled monographs of natural groups, and of such works there are, fortunately, many splendid examples. To students of the Lepidoptera the publications of Messrs. Rothschild and Jordan have furnished an example of perfection, which others may well find difficult of imitation; but those who, like the present writer, are conscious of a lesser capacity for achievement, may at least endeavour to follow, to the best of their ability, the path which has been thus so fully indicated.

To the comfort of those who would undertake such labours, naturalists are ever ready to place at each other's disposal, the resources which they individually possess, and it is thus that the pleasant duty devolves upon me of thanking most sincerely the many friends who have furnished me with material and assistance. It has been my privilege to carry out the present work under ideal conditions provided by the kindness of Professor Poulton in the Hope Department at Oxford, where I have had the free use of the whole of the vast store of material there accumulated. To him also I am indebted for kindly reading portions of the proofs, and for many valuable suggestions. Mr. Walter Rothschild has generously placed the whole of his collection of *Acraeas* at my disposal, not only for examination, but also for dissection and anatomical study. The authorities of the Natural History Museum at South Kensington have allowed me to make microscopic preparations from many valuable duplicates, and I am also deeply indebted to many other collectors and workers amongst whom I would especially mention Mr. G. T. Bethune-Baker, Dr. F. A. Dixey, Mr. G. C. Dudgeon, Mr. Herbert Druce, Mr. H. H. Druce, Mr. C. J. Grist, Mr. J. J. Joicey, Dr. Karl Jordan, Mr. G. A. K. Marshall, Mr. S. A. Neave, Miss E. M. Bowdler Sharpe, Mr. Roland Trimen, and Commander J. J. Walker.

Continental authorities have been no less generous in their assistance, and permission was granted me to work through the whole of the large collection in the Berlin

Natural History Museum, where Dr. Brauer, Professor Karsch, Dr. Strand, and Dr. Grünberg gave me much useful help. Herr Wichgraf permitted me to examine his extensive collection; Herr Ertl of Munich has sent me many interesting examples, including some types, whilst Professor Aurivillius at Stockholm, and M. Charles Oberthür at Rennes, have rendered constant and ungrudging assistance. To all I would tender my heartfelt thanks for having thus rendered my work a pleasure rather than a labour.

The genus *Acraea* was founded by Fabricius in Illiger's Magazine (1807). His definition is, "Taser zwei, lang, gefranzt, dreigliedrig; drittes Glied klein, nackt. Fühler geknopft. (Putzfüsse.)"

He gives as types *Pap. horta*, *terpsichore*, and *brassolis*, and states that there are 34 species. The *P. brassolis* here referred to appears in Kirby's catalogue as a synonym of the Pierine butterfly *Archonias bellona*, Cram.

Latreille in the "Encyclopédie Méthodique" defines the genus as follows:—"Borde interne des ailes inférieures n'embrassant presque le dessous de l'abdomen; palpes inférieurs grêles et presque cylindriques; antennes peu allongées et terminées brusquement en bouton."

Doubleday, Hewitson, and Westwood in the "Genera of Diurnal Lepidoptera" having given a preliminary description, divide the species into six groups or subgenera, viz. *Hyalites*, *Planema*, *Gnesia*, *Telchinia*, *Actinote*, and *Pareba*. The definitions of these subgenera are quite useless, as may be gathered from the fact that *A. lycia* is included under *Hyalites*, whilst *A. ganzini* is included in *Telchinia*, although both forms belong to the same species, *A. encedon*. The definition of *Telchinia* differs only from that of *Hyalites* in the statement that the latter has the second joint of the labial palpi "considerably swollen and but little scaly," whilst in the former the same structure is "considerably swollen and clothed in front with scales," much being thus left to the imagination of the observer. Moreover the distinctive features of the genus *Planema* are not recognised, since it is divided into two subsections, one of which contains *A. lycoa*, and *A. jodutta*.

Mabille, in his article on the genus in the "Histoire Naturelle de Madagascar," states that the *Acraeas* are well divided into groups, perhaps genera, by the male and female genital organs, but his conclusions seem to be

based on an inadequate study of these structures. His groups are, (1) *Solenites*, in which the ventral part of the termination of the male abdomen is occupied by a chitinous plate curved round in the form of a tube, the orifice of which is closed by the uncus. He gives *A. igati* as a type of this formation. (2) *Phanopeltis*, which includes *A. ranavalona*. (3) *Aphanopeltis*, in which the plate is reduced to a structure of variable form. This group includes *horta*, *zetes*, *egina*, and *pseudegina*. (4) *Acraea*. The impossibility of these groups is evident from the instability of the characters suggested. Schatz and Röber recognise five groups but admit that they are but slightly separated. The characters given are for the most part inconstant. Careful examination of all the features which have been utilised in the past for the purpose of subdividing the genus convinces me that they do not in fact provide grounds for such subdivision. *Acraea* is distinct from *Planema*, as Professor Aurivillius has pointed out in his "Rhopalocera Aethiopica." The latter genus may be known by the palpi, which are black with a lateral grey line; by the position of the first branch of the fore-wing subcostal, which is given off at or beyond the end of the cell; and by the relatively much smaller discoidal cell in the hind-wing. The pupae of *Planema* are also distinguished by the presence of long hooked spines which appear never to be present in *Acraea*. As to the genus *Pardopsis*, the only reason for associating it with the *Acraeinae* seems to be the closed condition of the hind-wing cell. The one known species of the genus was originally included in *Acraea* because it looked like a member of that genus—the worst of all possible reasons. Trimen separated it and founded the genus *Pardopsis*, pointing out the very curious neuration of the fore-wing. That author, however, states that the legs are as in *Acraea*, an error very easily made, even by an acute observer, if opportunities were unavailable for the microscopic study of these appendages. The fore-feet are of the usual Nymphalid kind, but the middle- and hind-feet have the tarsal extremities of a structure quite different from that in *Acraea*. The claws are slender and without the characteristic lobes, whilst there is a well-developed pulvillus, and peculiar curved and flattened spines on each side somewhat resembling true paronychiae. Unless the closed hind-wing cell can be shown to be of special taxonomic

significance, it would almost appear that *Pardopsis punctatissima* should have a sub-family to itself.

The South American genus *Actinote* is less distinct from *Acraea* than is *Planema*. The distinguishing features are black palpi, the presence of a rudimentary nervule in the hind-wing between the submedian and the first branch of the median,* and the heavily marked black nervules and internervular rays on the underside of the hind-wing. The neururation in *Actinote* is similar to that in *Acraea* but is more unstable, the sixth and seventh nervules being sometimes stalked in both fore- and hind-wings. In other respects the genus resembles *Acraea*. The female has the peculiar wax-like seal after pairing, and the male tarsal claws are unequal. The pupae also are white, with black lines and yellow-centred black rings.

The characters of the genus *Acraea* may be stated as follows:—Fore-wings either rounded or elongate, the inner-margin straight or very slightly concave. The palpi ochreous, very rarely blackish, the short terminal joint usually set with black hairs. No lateral greyish white line. The fore-legs rudimentary, their tarsi in the female with much reduced joints, and spined beneath; in the male hairy and brush-like with rudimentary joints. The second and third pairs of legs are of normal size and their tarsi terminate in the female in two equal and similar claws, lobed at the base. In the male these claws are also equal and similar in a few species, but in the majority they are unequal, one being long and regularly curved, the other short and bent down almost at right angles to the upper or anterior edge of the basal lobe (in one species, *servona*, with normally equal claws, unequal claws are occasionally found). In the fore-wing the discoidal cell is of medium length. The upper discocellular is very short, and the subcostal nervure is five-branched, the first branch being given off before the end of the cell. In the hind-wing the discoidal cell is usually longer than in *Planema* and reaches to about the middle of the wing. The sixth and seventh nervules usually arise from independent points, but in some species from a common stalk. In one species, *A. burni*, they vary in this respect in different individuals, and even in the two wings of the same individual. In others such as *A. iturina* the stalked condition appears to be constant. In some species nervules 3 and 4 arise

* This feature is also present in *Acraea mirifica*.

from a point at the end of the cell. The scales are normally of uniform size and nearly round. In those species which exhibit transparency of the wing, this result is attained by a variety of different methods. The scales may be reduced in width, may be mere hairs, may be normal in size but reduced in number, normal in size but raised up so as to allow the light to pass between them, or they may be absent altogether. In a few species large special scales are found on the median nervure on the underside of the fore-wing. The antennae are short and rather abruptly clubbed. The male genital armature varies from a state of extreme complexity to one of primitive simplicity, but in the majority of species exhibits little individual variation. In most if not all species special scales are found attached to the underside of the last abdominal tergite. These scales are sometimes present in enormous numbers. They are easily detached and may be scent-producing organs. The female usually possesses a chitinous plate on the seventh sternite surrounding the external orifice of the bursa copulatrix. The form of this plate is specifically constant in most species. Those females which possess such a plate have upon it after pairing a hard wax-like structure (see p. 7), often containing scales and hairs from the body of the male. The larvae * have two dorsal, two lateral, and two sub-lateral rows of branched spines, and the pupae are white or whitish with black spots, often in the form of rings enclosing yellow or pink centres. The neururation of the wings and the position of the other appendages are more or less outlined in black on the pupal skin. In many cases the pupa bears short blunt spines or processes, but so far as is known never has long hooked spines as in *Planema*.

The genus *Acræa* is almost confined to the Ethiopian region. In the Oriental region there occur four or perhaps five species, according as to whether we regard *A. meyeri* and *A. moluccana* as one species or two. Of these *A. vesta* is interesting as appearing to be closely allied to the African *A. anacreon*. *A. andromache*, which extends into the Pacific Islands as far as Samoa, shows in the structure of the male armature a close alliance with *A. igati* from Madagascar. I have dealt with the probable synonymy of the Oriental species in the Supplement to the present monograph.

* See F. Müller, Stettin Ent. Zeit., 38, p. 492, etc. (1877).

Observations in the field show that the larvae of *Acraea* are gregarious. The perfect insects are slow of flight and indifferent to pursuit. Many emit an acrid juice when injured, and all appear to be remarkably tenacious of life, being not only protected by the extreme toughness of their integuments from any mechanical injury, but also exhibiting a great power of resistance to the effects of toxic substances. Some small and apparently delicate species have been observed to remain in full possession of their faculties after more than half-an-hour's confinement in a cyanide bottle. Such species as have been utilised for experiments in palatability provide evidence of a high degree of distastefulness. Some of Marshall's experiments with a butterfly-eating Mantis, suggest that when driven by the absence of other food to an exclusively *Acraeinae* diet, a diseased condition, followed by death, ensued. In habits, some *Acraeas* are fond of the open, whilst others are woodland and forest species, and one or two are partial to marshy districts. Trimen in his work on the South African Butterflies describes them as of a peculiarly quarrelsome disposition, fighting desperately for the possession of a particular leaf on which to roost or to deposit their ova. From Marshall's observations in his well-known paper on the "Bionomics of South African Insects" the courtship of *Acraeas* would appear to be carried out on the principle, as he expresses it, of "marriage by capture," the male seizing the female in the air.

A very remarkable feature of the genus is the presence on the female, in the majority of species, after pairing, of a mass of hard wax-like material on the underside of the abdomen. This secretion or seal * as it may be called, occurs also in *Planema*, *Actinote*, *Amauris*, *Parnassius*, *Thais*, *Eurycus*, and *Euryades*. It seems to be composed of similar material in all the genera mentioned, though in *Acraea* and *Actinote* it frequently also contains a mass of hairs and scales derived from the abdomen of the male, these being often arranged in a beautifully symmetrical manner. Whatever may be the purpose of this secretion in *Parnassius* and in the other genera mentioned, its object in *Acraea* would appear to be, as originally suggested by Professor Poulton,†

* I submit the word *sphragis* as a technical term for this structure (Gr. σφραγίς = a seal). The term has been kindly suggested to me by Professor Poulton after consultation with Mr. Arthur Sidgwick.

† See Trans. Ent. Soc., p. 539, 1902.

the prevention of the amorous attentions of subsequent males after once the female has been paired. In this view Marshall concurs (*l. c.*), pointing out that if courtship always takes place in the forcible manner he has observed, some such provision would appear to be a necessity. In another note on the subject* Marshall records that such protection is not, however, absolute, since he has taken three female *Acraeas* in which the sac has been duplicated, though in these cases both sacs were more or less distorted in shape indicating that the second pairing must have taken place immediately after the first and whilst the first secretion was still in a viscous condition. This being so, as the author points out, the exceptions need not invalidate the theory that the secretion, when hardened, would offer a sufficient obstruction to the use of the complicated male claspers. I am further inclined to believe that the *sphragis* may act in another way. As a result of a recent observation Mr. W. A. Lamborn has recorded† that a female *Planema alcinoe* was observed to have four males, all clinging to it at the same time, some even holding on to its wings and endeavouring to attach their claspers to its body. Now such behaviour appears to argue the emission by the female of some powerful sexually exciting scent, and if such be the case, the *sphragis* may well serve to inhibit the emission of this odour and thus free the female from further attentions.

From the investigations of Elwes on *Parnassius* we may, I think, conclude that this "seal" is formed by a secretion from the male, and this view is confirmed by an interesting note by Dr. Fritz Müller‡ who has studied the matter in the genus *Actinote*. Speaking of the appendage the quotation is as follows: "The female of *Acraca* (*Actinote*) *thalia* has this appendage. It is shaped something like a hollow tile, and is fastened by one end, close behind the female orifice, then directed forward, usually at a very acute angle with the body, rarely standing out at right angles. Ever since I first bred this species from the larvae many years ago, I have known that the female does not emerge from the pupa bearing this appendage but that as in *Parnassius* it is a sign of completed copulation. It

* See Entomologist, p. 73, 1901.

† Proc. Ent. Soc., p. xcv, 1911.

‡ Carus, Zool. Anzeiger, p. 415, 1893. (I am indebted to Professor Poulton for kindly calling my attention to this reference.)

is only during this last season that I have been able to inquire into its origin. By pressing the abdomen of the *Acraea* males, one can force out from under the posterior margin of the last dorsal plate a very large gland, which is entirely similar to that which the females of the 'Mara-cujá butterflies' (*Heliconius*, *Eueides*, *Colaenis*, and *Dione*) exert at the same spot when seized. This gland is sometimes bare, sometimes covered with brown or blackish scales and hairs, which fall off at the slightest touch. The appendage of the female, when treated with hot soda-lye and crushed between glass plates, proves to be composed of hairs and scales of the same form. Among hundreds of males which I examined for this purpose, almost all showed the gland either entirely covered or entirely bare: twice only I found the hairs stuck together in small isolated patches, and twice joined together in a structure similar to the female appendage but thinner and more fragile. Probably in the act of pairing one of the sexes emits a rapidly drying fluid which gives it the subsequent thickness and solidity."

At one time I hoped to find in *Acraea* some correlation between the inequality of the male tarsal claws, and the occurrence of the *sphragis* in the female. I find however that in some species in which the male claws are unequal, the *sphragis* is not formed in the female, at least so far as I am able to judge from the extensive material which has been at my disposal. I have examined the claws in the other genera mentioned, and find that whilst the male *Parnassius* has unequal claws, those of *Euryceus*, *Euryades*, and *Amauris* are equal. *Thais* has only a slight development of the *sphragis*, and has unequal claws in the male, whilst the genus *Doritis* has unequal claws in the male, but I can find no secretion in the female.

The peculiarity of the male tarsal claws is one to which I am still unable to assign a satisfactory explanation. The few species of the genus which have the claws equal, do not present any other feature which would serve to separate them, however slightly, from the remaining members of the genus. Moreover if, as seems inevitable, we are to regard all the examples of the *servona* form as of one species, we have in this one case an instance of unequal claws appearing occasionally as a reversion, in a species in which the claws are normally equal.

Whilst the meaning of this structure must for the present remain unexplained, a knowledge of it is of

material assistance in determining the sex of a specimen, in the event of the abdomen and front-feet being missing, as in a damaged example. In the great majority of species the male claws are unequal, and thus if a single leg remains, the sex can in those species be determined. Probably in no genus is the question of sex more easily decided. The female cloacal valves are very different in appearance from the arched and hirsute tergite of the male. Should this test fail the difference of structure between the fore-feet of male and female is easily observed, in many cases even with the unaided sight. Finally the tarsal claws are, as stated, a certain guide in the majority of species. In spite of these facts, which are by no means new, many published works abound in errors as to the sex of the species therein described, such errors adding greatly to the difficulties of the systematist, more especially in cases of unique types difficult of access.

A phenomenon common to many Lepidoptera and known as "seasonal dimorphism" is exhibited to a greater or less extent by many species of *Acraea*, especially those which may be said to belong to the *acrita* and *caldarena* groups. I do not propose on the present occasion to enter upon a discussion of this interesting and complicated subject, which constitutes a special study in itself. It is, however, necessary briefly to allude to the phenomenon as manifested in this genus.

A. atolmis presents a dry-season male in which the spots are exceedingly small, and a female, the ground-colour of which is yellowish brown. The corresponding wet forms are a male, in which the black marks are all more highly developed, and a female which is actually black, often with a whitish subapical bar. Seventeen examples of the species taken at the Victoria Falls in September are all distinctly of the dry-season form. The only record I have for that locality is 1906-7 when Sept. 1906 showed barely .6 in., whilst in the previous May, June, July, and August the fall was nil. The maximum occurred in February 1907 when 14.7 in. of rain fell. Of five males taken on the Lualaba R. in October, one is of the dry form, one intermediate and two wet, whilst of five specimens taken in May, four are wet and one intermediate. In this region May, June, July, and August are the dry months and March and November have the maximum rainfall, viz. 7.9 in. and 8.6 in. respectively, so that the specimens, having

occurred at the beginning and end of the dry season, show a variable and intermediate condition. In Angola wet and dry examples have been taken together in September which is the beginning of the rains, so that the correspondence of the forms is here not well marked. Black females bear date January to April, and September to November. February, March, and April are the wettest months, but the rainfall is extremely variable in different years, and also differs greatly in different localities. Thus inner Angola is within the 40-inch line, but towards the coast there are three distinct belts of decreasing rainfall, the mean at Loanda being only one-sixth of that at Comber Station ($6^{\circ} 16' \text{ S.}, 15^{\circ} 17' \text{ E.}$, alt. 3,100 ft.).

A. petraea and *A. aglaonice* correspond fairly well with the seasons, the latter tending to lose the subapical translucent fore-wing spots in the dry season. *A. equatorialis* varies very little in the male sex, but the females may be either yellow like the male, or grey, with an incipient fore-wing subapical pale bar. A long series taken near Kisumu in November, December, January, and March shows great variation in this respect. Whilst in this locality these months are amongst the wettest, there is no month in which rain does not fall, the minimum being 1.77 in. in July, and the maximum 7.09 in December.

A. caldarena is rather variable. Marshall refers to the wet-season males in Mashonaland as having a brighter pink ground-colour, whilst Neave speaks of this feature as characteristic of the specimens he took in the "hot dry Luangwa Valley." Unfortunately this pink colour fades rapidly, and cabinet specimens rarely furnish good illustrations of this particular feature. September (dry) males from Mashonaland have a brownish basal suffusion and January (wet) specimens are without this character. March (wet) examples usually have the basal brown. All the females corresponding to the above have the ground-colour brownish. Ft. Jameson examples taken in March (wet) have grey and white females and ochreous males. On the Alala plateau both wet and dry forms are found in November (early rains). February (wet) specimens from Angoniland include both pink and ochreous males, the females being dark but not grey and white. Kisumu examples taken in November (wet) are both pink and ochreous, with and without basal brown, thus showing a lack of differentiation similar to that in *equatorialis*.

A. oncea shows a moderately good correspondence with the seasons in its various localities, the wet form of female being black with a white subapical bar, whilst the dry-season forms have the ground-colour reddish brown. Examples from near Tete on the Zambesi, and from Ft. Jameson correspond very nearly with the climatic conditions, though on the other hand specimens from Chirui Island, L. Bangweolo, taken in July, have wet-season males, *i. e.* heavily spotted, and dry-season females, the latter however, showing but little indication of the fore-wing white bar. The same condition occurs in May (dry) specimens from Awemba, North-East Rhodesia.

The foregoing examples seem to show that many species do, in a general way exhibit a dimorphism which may be termed seasonal, but before any profitable study of this subject can be made, very much larger series of examples must be available, labelled, not merely with the precise locality, but also with the date of capture, and further with what I think will prove to be of equal importance, the elevation of the locality; and here I may remark that though of late years, satisfactory labelling has received much greater attention than formerly, and in one institution with which I am acquainted may be said to have reached perfection, there seems still to remain in the minds of some owners and keepers of collections a very inadequate conception of the necessity of full and correct labelling.

Turning from seasonal to sexual dimorphism, we find that this phenomenon is of very frequent occurrence in the genus, in fact a marked difference in the appearance of the sexes may be said to be the rule. Moreover, whilst the females differ from the males one or both may be polymorphic. Female polymorphism reaches its greatest development in *Acraea terpsichore*, of which it is possible to arrange a long series in which no two individuals are alike, and although the male of this species is also polymorphic, it presents nothing like the range of variation exhibited by the female. In this case the different forms seem to indicate merely a condition of extreme instability. I cannot associate any one form of female with a particular form of male, nor do any of the variations seem to be governed by either seasonal or geographical conditions.*

* In the ♂ the *rougeti* form is certainly more characteristic of the East and South, though the difference is not quite constant.

A more interesting case is that of *Acraea alciope*, the male of which varies but slightly throughout its range, whilst the female, though still variable, appears in two predominant forms, the western form being dark brown and mimetically associated with dominant western forms of *Planema*, whilst the eastern or *aurivillii* form has an orange band on the fore-wings and a white band on the hind-wings, thus resembling the male of the dominant eastern *Planema macarista*.

A very remarkable case of sexual dimorphism is that discovered by my friend Mr. S. A. Neave, who pointed out that the transparent and almost immaculate *A. crystallina* is the female of *A. chilo*. *A. bonasia* has two forms of female, one of which is near the *cynthius* of Drury. *Acraea peneleos* has many female forms, one of which has just been discovered in a long series of specimens bred by Mr. W. A. Lamborn near Lagos, and two others are represented by examples in the Hewitson collection, but appear never to have been recognised or described. The first-named has a lemon-yellow band across the hind-wings, in the second the band is white and better developed, whilst the third has the wings nearly black. It was the appearance of the yellow-banded form which gave me the clue to the identity of the white-banded examples, intermediates between this and the black form leaving no doubt as to the identity of the latter. Polymorphism of both sexes is of common occurrence, and in some cases the forms are so extreme that only by careful anatomical study can their true relationship be established. Thus I have found that Butler's *A. astrigera*, a brilliant orange and red eastern species, is specifically identical with the same author's *pseudolyceia*, the latter a black and white form of very different appearance. Perhaps still more remarkable is the discovery that Hewitson's little red, black and transparent *orestia* is specifically identical with Miss Sharpe's *humilis*, which in its extreme form is almost devoid of colour, spots, or markings.

One instance is known to me of polymorphism of both sexes, accompanied by a geographically limited sexual dimorphism. This complicated condition obtains in *A. lycoa*. From its western limit to Mount Kilimandjaro it presents a series of six different forms, in which however the sexes are constantly different, the female having the fore-wing spots white whilst those of the male are

yellow of various shades. In Abyssinia both sexes are alike, the fore-wing spots being yellow. Polymorphism in *Acraea* is, as in other genera, frequently associated with obvious mimetic resemblance in the forms produced. *A. alciope* presents a remarkable case in point. Another instance almost comparable to that of *Papilio dardanus*, except that the mimicry is found in both sexes, is exhibited by *A. johnstoni* which produces forms which closely resemble two different Planemas and three Danaines. An isolated but no less interesting case is the *acritoides* form of *A. periphanes*, which is so modified as to be easily mistaken for that form of *A. acrita* which occurs in its locality. *A. jodutta* has two different females resembling two Planemas, whilst *A. althoffi* has several female forms, one of which is like the male, the others resembling and habitually flying with the above-named females of *jodutta* and their models.

Island forms of *Acraea* include several interesting species and races. In the Island of São Thomé three species occur which have not so far been found on the mainland, viz. *insularis*, *niobe*, and *newtoni*. Of these the latter may well be a local race of *A. penelope*, but the others are quite peculiar and unlike any other known species. From the Ilha do Principe comes the *medea* form of *A. egina*, characterised by its greatly enlarged and confluent spots. Figures of the female of this form occur in several of the older publications, though all seem to be copies of an original figure and not of separate examples. The older works usually give Senegal as the habitat, but if it ever occurred on the mainland, it appears no longer to do so. The peculiar *lactimaculata* form of *peneleos* ♀ seems to occur only on Fernando Po. The *masaris* form of *A. csebria* occurs in the Comoro Islands. Two islands in L. Bangweolo, Chirui and Chishi, have furnished examples of *A. oncea* which are more brilliantly coloured than any others I have seen, whilst from Chishi Island we have received a form of *A. zetes acara* which is of special interest in having the hind-wing spots so greatly reduced as to make it at the first glance almost indistinguishable from *A. astrigera*, with which it is doubtless very nearly allied.

Indications of a general correspondence of colour with geographical distribution seem to be afforded by the dark fore-winged forms of *zetes*, *egina*, and *natalica* from the

extreme West, the extent of the red colour increasing as the species ranges East and South, not only in the three species mentioned, but to a less extent in *pharsalus*, which develops into *pharsalus pharsaloides*. On the other hand this change is in the opposite direction in *A. lycoa*, which, beginning in the West as a pale semitransparent form, gradually becomes more heavily and darkly pigmented until it is represented at Mount Kilimandjaro by its subspecies *fallax*. *A. penelope* is a similar case in point. Two of the black and yellow *Acraeas*, viz. *oreas* and *servona*, exhibit a very marked change in the hind-wing underside colour in passing eastwards. Western examples are lemon-ochreous beneath, the colour changing to brown, or even nearly black, at Entebbe. *A. servona* retains its pale yellow colour in German E. Africa, whilst *A. oreas* is of a slightly warmer tint in that locality.

So extremely complicated is the variation of species of the genus, that it has been more than once suggested to me that hybrids are occasionally produced. I can only say that after careful examination of over fifteen thousand examples, I have seen no single individual which would lend support to such a view. I have dissected out and mounted the genital armatures of nearly five hundred specimens, and have only once found an abnormal or aborted example. So far as my observations enable me to judge I should say that individual variation in these organs is, except in one species, very slight and of rare occurrence. I refer to *A. acrita*, as to the true taxonomy of which, after examining hundreds of examples, I am still in doubt. I am of opinion that each species can always recognise a mate of its own kind, and it seems to me that such infallibility may be not unconnected with the production of some special exciting scent in one or both sexes.

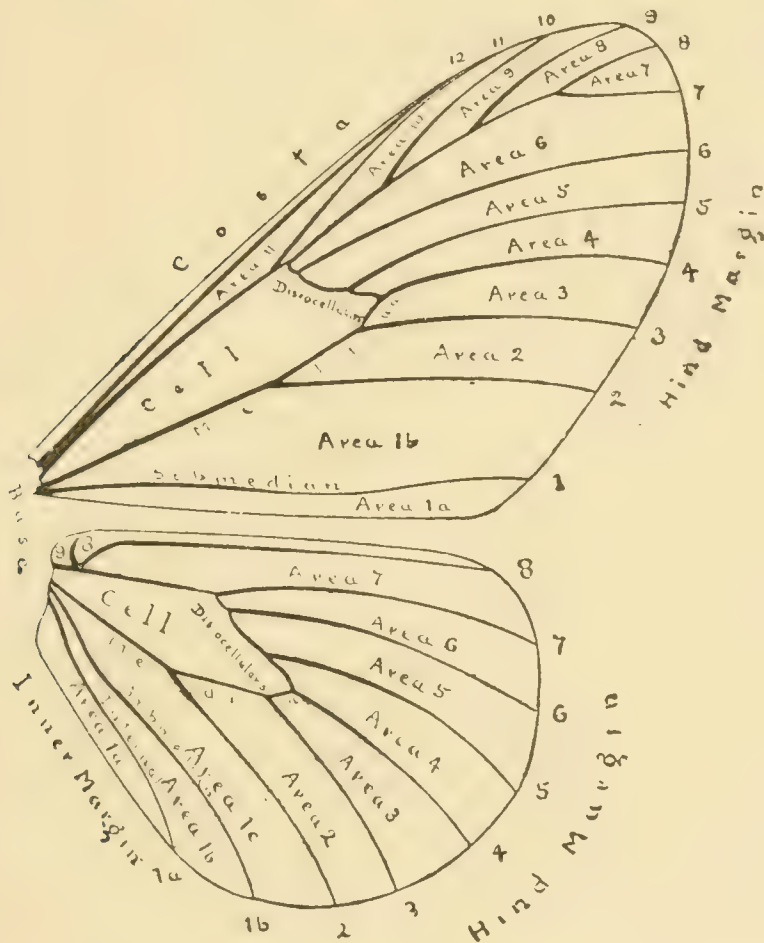
With regard to the determination of species it may be well to explain the general principles which I have adopted in the present monograph.

Without attempting to formulate a definition of the meaning of the word species, I regard a species as a community of individuals, of which at least the geographically contiguous, and most probably, all the contemporary members, are capable of, and, on the opportunity arising, disposed to, syngamy. I am compelled to leave in doubt the question of the syngamy of forms widely separated

geographically, since, to take a special instance, we have at present no means of proving that *pseudolycia astrigera* would pair and prove fertile with *pseudolycia pseudolycia*, though there seems no reason to doubt the probability, if each of these forms is ordinarily syngamic with the intermediate form *pseudolycia brunnea*. In the consideration of evidences of such syngamy we must, I think, be prepared to give full value to each particular point, and to consider all the items in relation to the whole, rather than allow ourselves to be bound, in all cases, by the indications of one particular feature to the exclusion of others.

Thus it may be assumed that constant differences in the male armature are good evidences of specific distinction, though when these organs are of a primitively simple structure, similarity does not necessarily argue specific identity. In some cases the structure of the female genital plate enables us to confirm or modify views based on that of the male organ. In some cases the male tarsal claws provide valuable indications. Again, intermediate types of pattern and colour leave no doubt as to the specific identity of forms which, but for such connecting links, would appear to be very distinct. Where I have reason to believe that a particular form of a species is peculiar to a certain geographical area, I have called it a subspecies. Where, as frequently happens, a form of a species seems liable to occur in various parts of that species' range, and not to the exclusion of other forms, I have merely styled such variations from the type as "*forma*," thus leaving the way open to the ultimate establishment of whatever more particular definition the acquisition of subsequent material and data may enable us to adopt. I have avoided as far as possible the use of the word "variety," since the limitation of its meaning is too ill defined. I am aware that such a system is not infallible, or indeed capable of universal application, since cases may occur where a variety is a mere form in one locality, and entitled to be regarded as a subspecies in another. Nevertheless it is not without a certain convenience, and, with our present conception of the evolutionary nature of species-formation, the precise limitation of what is called a "species" has necessarily lost much of its importance, as compared with the recognition of the degrees of affinity which appear to obtain between the forms studied. In the case of the genus *Acraea* we have

many species which are quite clearly defined and exhibit no close alliance with others. On the other hand, such a community of forms as are grouped together under the name of *Acraea acrita* offers material for prolonged and careful study—a study to which we cannot hope to do justice, until we possess a vastly greater material from every part of the range, and taken at various seasons. Again, whether



we regard *zetes*, *chilo*, *oscari*, and *hypoleuca*, as four species or as one, must remain largely a matter of the convenience of the moment. In a few such cases I fear that I may be accused of a certain amount of inconsistency in the arrangement of the genus. If so, I can only say that in many cases it is extremely difficult, if not impossible, to decide whether a form has yet passed over that dividing line which separates one true species from another. The difficulty experienced is merely a confirmation of our

theories of species formation. The information that, on the one hand, *zetes* and *chilo* had been definitely proved to be the same species, or, on the other, that *welwitschii welwitschii* and *welwitschii alboradiata* were certainly specifically distinct, would, though interesting, not alter the existing fact of their close relationship.

It only remains to give certain explanations of some remaining features of the work. The appended chart of the wing neurulation is merely a diagram to illustrate the numbers and terms used in the descriptions. The drawings of genitalia have been made from the actual preparations by means of a Leitz reflector, and are intended to illustrate the characteristic form in each case, though it must be borne in mind that such conclusions as have been based on these structures, have not been arrived at from the drawings, but from the preparations themselves, examined from various points of view. In a very few cases, paucity of material has precluded the preparation of more than one specimen. In the majority of species, series of preparations have been made, not only from different individuals, but also, where possible, from different localities. Only by so doing, can a correct estimate be made of the range of individual variation, which, though small in *Acraea*, does occur, and is not to be confused with specific difference. It may be objected that the figures are not all drawn from the same point of view. The view adopted however, is that, which in each case, seems best to show the characteristic structure.

In addition to the figures of male genitalia I have made a small number of drawings of the chitinous plates which, in the female, surround the external opening of the *bursa copulatrix*. These structures, though very characteristic of some species, are in others but slightly developed. Unfortunately the latter condition persists in many species of which the male armature furnishes little guide to specific distinction. I have also illustrated a few examples of the peculiar structure of the *sphragis* or copulatory seal, though this feature, even when well developed is not, I think, of much systematic importance.

For the opportunity of illustrating the larvae on Plate VI, I am entirely indebted to my friend Mr. W. A. Lamborn, who, with praiseworthy care, has preserved and forwarded the specimens together with notes as to colour, corresponding to a colour chart with which I provided him. The illustrations of imagines have been drawn in every case

from the actual specimen. Of some sixty forms represented, very few have been previously figured. The synonymy tables do not profess to give every known reference, though it is hoped that none of geographical or synonymic importance has been omitted. In this and other respects I have not hesitated to make use of Professor Aurivillius' catalogue, the constant employment of which has served to increase, if possible, my intense admiration for the almost incredible labour of which that work is the record. The key to the species has proved by no means the least difficult portion of my task. I doubt whether any approach to perfection could be attained in a key to so variable a genus. A key, to be quite satisfactory, presupposes a certain stability of colour and pattern which is sadly lacking in the genus *Acraca*; nevertheless I trust it will be found of some assistance as a mere mechanical aid to identification. An attempt has been made to arrange the species in groups, and though some of these appear to be fairly natural, others are much less convincing, whilst in certain cases a "group" has but one representative. Our knowledge of the true affinities of the species is at present very elementary, and but little importance can be attached to this feature of the arrangement.

In the preparation of such a paper as the present we can but make the best use in our power of the material at our disposal. It must be borne in mind that our largest collections contain but a small number of samples, the ratio of which to the bulk occurring in nature is almost infinitely small. Many of our conclusions are based on the assumption that this ratio, though small, is correct. I have spared no pains to follow up whatever line of research the work has suggested. If the result is to increase, even slightly, our knowledge of a singularly interesting and difficult group of insects, I shall be amply repaid.

KEY TO THE AFRICAN SPECIES OF *ACRAEA*.

[The portions printed in italics with names of species in roman letters refer to female characteristics. The numbers after the species' names refer to the pages on which the descriptions will be found.]

The two following species can be at once recognised by their peculiar characteristics.

H.-w. underside dull metallic gold with a submarginal row of crimson spots *mirifica* (208)

H.-w. underside ochre-yellow with a central band of grey

flecked with red and enclosed basally and distally by narrow black lines. Marginal border grey with black nervule ends. A submarginal series of narrow, black, transverse internervular streaks, followed inwardly by elongate internervular orange marks *mirabilis* (216)

KEY TO SECTIONS.

- H.-w. without black spots I
H.-w. with black spots (a)
(a) H.-w. underside with dark internervular rays at least in some of the spaces, such rays not being bifurcated at or near margin (h)
H.-w. underside without internervular rays, or with such rays bifurcated (b)
(b) F.-w. upperside fully scaled and not transparent* . . . (d)
F.-w. partially transparent, usually on outer half (in *camaena* and *niobe* smoky translucent). (c)
(c) H.-w. hind margin at least partially transparent, without spots or black border II
H.-w. hind margin with spots or black border (in *cinerea* h.-w. border not separated from remainder of ground-colour). III
(d) H.-w. hind marginal border on underside enclosed by a black line without enclosed spots IV
(Some examples of *asboloplintha* have green h.-w. marginal spots, but this species is quite unlike any other form of *Acraea*.)
H.-w. hind marginal border on underside with enclosed spots (e)
(e) The black or dark colour enclosing spots is not produced inwardly to form a bifurcated internervular mark or ray and the spots are submarginal, or, if marginal, the h.-w. also bears discal spots (f)
The black or dark colour enclosing spots is usually produced inwardly forming a bifurcated ray the submarginal portion of which may contain or consist of, red or yellowish streaks. The spots are always marginal. Or if the border is sharply defined black with marginal spots, and without inward processes, then the h.-w. has no discal spots . . . VIII

* The following are included in this section of key although owing to variability some examples are partially transparent.

Aglaonice sometimes, *amicitiae*, and most examples of *doubledayi* have a partly transparent subapical patch.

Pudorella and *equatorialis anaemia* are sometimes so thinly scaled as to be partially transparent.

- | | | |
|-----|---|-----|
| (f) | Basal spots of h.-w. underside are more or less confluent and enclose or tend to enclose pale spots. (Some examples of <i>turna</i> are thus but the species usually comes under Section VI.) | V |
| | Basal spots of h.-w. underside are not confluent | (g) |
| (g) | Discal spot in lb of f.-w. is much nearer margin than that in 2 so that a line joining their centres would pass through cell* | VI |
| | Discal spot in lb of f.-w. is beneath or nearly beneath that in 2 so that a line joining their centres would pass outside cell | VII |
| (h) | Internervular rays not connected with hind margin or at least reduced to a fine point at margin | IX |
| | Internervular rays connected with hind margin and not narrower there than elsewhere | X |

I.

- H.-w. with a discal black band *zonata* (42)
H.-w. without a discal black band (a)
(a) H.-w. transparent and uncoloured except at margin
. *rabbaiæ rabbaiæ* (43)
H.-w. thinly scaled with whitish ochreous
. *rabbaiæ mombasæ* (43)

II. The ♂ key will serve for ♀ characteristics if it be borne in mind that the ♀ unimaculata generally has no spots on either wing, and that in damii and cuva the red of the ♂ is usually replaced by yellowish or whitish.

II.

- F.-w. without spots (c)
F.-w. with spots (a)
- (a) H.-w. margin transparent, broad, and not well defined *kraka* (52)
H.-w. margin transparent, or partly transparent, narrow,
usually well defined, and tapering to a point at anal
angle (b)
- (b) H.-w. nervules 6 and 7 not stalked *cerasa* (54)
H.-w. nervules 6 and 7 stalked *iturina iturina* (57)
- (c) H.-w. generally with only one spot (d)
H.-w. with more than one spot (e)
- (d) Wings almost entirely transparent *orestia humilis* (part) (305)
Basal part of f.-w. and most of h.-w. brick red
unimaculata (56)

* *A. anacreon anacreon* should be sought under this section, though owing to variability the discal spots in many examples would indicate Section VII.

- (e) H.-w. without a spot in middle of cell (f)
H.-w. with a spot in middle of cell (h)
(f) H.-w. with a large spot in area 7 immediately above and
contiguous with the spot in 6 *igati* (49)
H.-w. with a large spot in area 7 widely separated from that
in 6 (g)
(g) F.-w. only slightly suffused with red (or whitish), h.-w. trans-
parent margin broad *damii damii* (50)
F.-w. broadly suffused with red (or whitish), h.-w. transparent
margin narrow *damii curva* (50)
(h) Wings translucent and finely dusted all over with dusky
ochreous without a tinge of red *eugenia* (53)
F.-w. with at least the outer half, and h.-w. marginal border,
quite transparent (i)
(i) F.-w. very slightly suffused with red (or brownish)
. *quirina quirina* (59)
F.-w. rather broadly suffused with red *quirina rosa* (59)

- F.-w. entirely transparent, without markings except for a few brownish scales at base extreme f. of chilo (89)*
Not so (a)

- Abdomen long, extending well beyond anal angle of h.-w., its distal half white *braesia* (169)
- Abdomen not unusually long, extending little, if at all, beyond anal angle of h.-w., its distal half not white (a)
- (a) H.-w. border not black, but having small blackish triangles at nervule ends (b)
- H.-w. border black, spotted or unspotted (c)
- (b) Large (70-75 mm.), h.-w. with a regular curved row of large rounded submarginal spots *hova* (60)
- Small (about 50 mm.), h.-w. without submarginal spots *mahela* (71)
- (c) H.-w. border bearing marginal red spots, and submarginal black spots. The latter distinct and well developed (d)
- H.-w. border not so formed (e)
- (d) F.-w. but slightly suffused with red *ranavalona* (64)
- F.-w. suffused with red, at least to end of cell *machequena* (66)
- (e) Base of f.-w. transparent, not scaled with yellow, red, or black (f)
- Base of f.-w. not transparent, scaled with yellow, red, or black (g)
- (f) H.-w. all black on upperside *cinerea* (307)
- H.-w. black with a crimson central patch *cinerea alberta* (307)

- (f) *H.-w. dusted with milky white, and beneath with well-developed black spots on a yellowish ground splashed with reddish* diogenes (156)
H.-w. not so marked. All black on upperside . cinerea (307)
(g) *F.-w. with a blackish transverse bar (in satis not always quite continuous) from costa to inner margin* (h)
F.-w. without such bar (i)
(h) *A very irregular transverse bar across h.-w.* satis (44)
H.-w. without such bar cerita (55)
(i) *F.-w. uniformly smoky translucent with only one spot* camaena (82)
F.-w. not so (j)
(j) *H.-w. border on underside bearing black arches surmounted by large red internervular marks* lia (67)
H.-w. border not so marked (k)
(k) *H.-w. basal spots on underside more or less confluent and enclosing or tending to enclose pale spots of ground-colour* (l)
H.-w. basal spots on underside well separated (p)
(l) *F.-w. with discal spots (sometimes very faint) in areas 4, 5, and 6* (m)
F.-w. without such discal spots (n)
(m) *Nearly the whole of outer half of f.-w. transparent* neobule neobule (72)
Transparent part of f.-w. limited to a narrow subapical band neobule seis (72)
(n) *At least the outer half of f.-w. transparent* (1)
Transparent part of f.-w. limited to a narrow subapical band. neobule seis (72)
(1) *Only outer half of f.-w. transparent* neobule neobule (72)
Whole ground of f.-w. transparent chilo (89)
(n) *H.-w. discal spots confluent and forming a bar across wing* iturina kakana (57)
H.-w. discal spots not forming such a bar (o)
(o) *H.-w., marginal border beneath with large distinct pale spots, and with a discal row of spots beyond cell* horta (76)
H.-w. marginal border narrow and unspotted. No separate discal spots insignis (81)
(p) *H.-w. border formed of large black rings enclosing round spots of ground-colour* (q)
H.-w. border narrow, blackish, with or without small rounded spots of yellow or reddish (r)
(q) *H.-w. without a white patch at anal angle* admatha admatha (78)
H.-w. with a white patch at anal angle admatha leucographa (79)
(r) *H.-w. partially transparent, or smoky translucent* (s)
H.-w. fully scaled (t)

- (s) Entire ground-colour smoky translucent, large rounded black spots on both wings. End of abdomen red . . . *niobe* (344)
F.-w. transparent except for a reddish flush at base . . . *obeira obeira* (68)
- (t) F.-w. with discal spots in 5, 6, and 7 . . . *neobule arabica* (73)
F.-w. without such spots . . . *obeira burni* (68)
- (t) *F.-w. with discal spots in 5, 6, and 7* . . . *braesia* (169)
F.-w. without such spots . . . *obeira burni* (68)

IV. [Occasional aberrant examples of *egina* might be referred to this section. Such specimens may be distinguished from the other species in the section by the pale green underside of h.-w. hind marginal border.]

Discal spots of h.-w. form a regular line which traverses areas 7, 6, and 5 parallel to apical margin, and then bends sharply inwards at less than a right angle and runs straight across to inner margin (α)

H.-w. discal spots not so arranged (b)

(a) Pale central band of h.-w. underside is outwardly bordered with black at least in 1b to 4 *rahira* (202)

Pale central band of h.-w. underside not bordered with black
nitja (part) (204)

(b) Area 7 of h.-w. with three black spots *rohlfsi* (136)
 Area 7 of h.-w. with less than three black spots (c)

(c) F.-w. ground-colour black or olive-brown	.	.	.	(d)
F.-w. ground-colour not so	.	.	.	(e)

(d) F.-w. with very little (if any) inner marginal red
asboloplintha asboloplintha (196)

F.w. with a rosy inner marginal suffusion extending as far as,
or into cell *asbologlintha rubescens* (196)
♀ has the rose colour replaced by white.

(e) F.-w. with three or four small quadrate transparent or semi-transparent subapical spots *amicitiae* (part) (317)

F.-w. without such spots (f)

(f) Well marked black internervular rays on apex of f.-w. on
upperside *atergatis* (part) (188)

F.-w. without such rays *atolmis* (part) (137)

V.

F.-w. brown black above, without red or yellow markings though with a trace of whitish subapical marks *zetes zetes* (83)
♀ has f.-w. paler and subapical white better developed.

F.-w. not so (a)

(a) Base of f.-w. beneath with an unbroken black patch. . (b)

Base of f.-w. beneath with separated black spots . . . (e)

- (b) H.-w. upperside with a central white patch (c)
H.-w. upperside without a central white patch (d)
- (c) White patch large, white streaks on f.-w. subapical area. A series of faintly developed reddish spots along inner edge of h.-w. hind marginal border on underside
welwitschii alboradiata (97)
White patch small, no white streaks on f.-w. apical area. A series of well-developed bright red spots along inner edge of h.-w. hind marginal border on underside
welwitschii welwitschii (97)
- (d) Ground-colour of f.-w. rich rose pink, fringes of h.-w. between nervules very prominently white . *welwitschii lobemba* (97)
Ground-colour of f.-w. orange ochreous, fringes of h.-w. between nervules less prominently white *anemosa* (94)
- (d) Basal ground-colour of f.-w. beneath, reddish
welwitschii lobemba (97)
Basal ground-colour of f.-w. beneath, ochreous . *anemosa* (94)
- (e) Ground-colour of f.-w. black brown with yellowish or reddish submarginal spots *zetes menippe* (83)
♀ has ground-colour paler and duller than in ♂.
Ground-colour of f.-w. not black-brown (f)
- (f) F.-w. with ground-colour of basal half white
pseudolycia pseudolycia (102)
F.-w. without white on basal half (g)
- (g) F.-w. hind margin at least in areas 1b and 2 without marginal spots of ground-colour or of yellow enclosed by black . (m)
F.-w. hind margin with spots of ground-colour or of yellow enclosed by black (h)
- (h) Subapical area of f.-w. not separated, nor of a different shade, from the ground-colour which is rose pink or yellow . (i)
Subapical area of f.-w. separated and containing a patch of colour which is either rather paler than the ground-colour or is bright orange (k)
- (i) F.-w. hind margin without an enclosed spot of orange in area 6
zetes barberi (84)
F.-w. area 6 with such spot (j)
- (j) Base of f.-w. cell upperside suffused with black. F.-w. spots large and partly confluent *oscari* (91)
Base of f.-w. cell upperside not suffused with black. F.-w. spots smaller and well separated. For ♀ see Section III. *chilo* (89)
- (k) F.-w. with a small subapical patch of red or reddish white
zetes jalema (84)
F.-w. with a large orange subapical patch (l)
- (l) H.-w. without a white patch *zetes acara* (84)

- H.-w. with a white patch *zetes acara* f. *caffra* (84)
 (m) Discal portion of h.-w. red *pseudolycia* f. *astrigera* (101)
 Discal portion of h.-w. dusky ochreous
 *pseudolycia* f. *brunnea* (102)
 (m) *Discal portion of h.-w. reddish* *pseudolycia* f. *astrigera* (101)
Discal portion of h.-w. ochreous *pseudolycia* f. *brunnea* (102)

VI.

- Ground-colour white or cream. H.-w. hind-marginal border black, or sepia, with a submarginal row of white dots followed inwardly by yellow spots. F.-w. hind-margin markedly concave. (a)
 Not so (b)
 (a) Ground-colour white *turna* (105)
 Ground-colour cream *turna* f. *marmorata* (105)
 (b) F.-w. apex on underside with well-marked black internervular rays which reach margin (c)
 F.-w. apex beneath without such black rays (e)
 (c) H.-w. with three spots in area 7 *cephesus* (111)
 H.-w. with two spots in area 7 (d)
 (d) H.-w. marginal border beneath with green spots
 *egina egina* (part) (106)
 H.-w. marginal border beneath with orange spots *perenna* (part)
 (e) F.-w. with submarginal spots at least in 1b and 2 (f)
 F.-w. without submarginal spots (k)
 (f) F.-w. nervules at apex well marked with black (g)
 F.-w. nervules at apex not specially black (h)
 (g) Ends of h.-w. nervules well marked with black *petraea* (114)
 Ends of h.-w. nervules not specially black *büttneri* (118)
 (h) H.-w. marginal black border on upperside with little or no trace of pale spots (i)
 H.-w. marginal border on upperside with distinct, though sometimes small, pale spots (j)
 (i) H.-w. marginal border about 2·5 mm. wide. End of abdomen whitish *omrora omrora* (124)
 H.-w. marginal border 3-5 mm. wide. End of abdomen yellowish *omrora umbrata* (124)
 (j) Black spots of both wings large and well developed *violarum* (120)
 Black spots of both wings comparatively small *asema* (122)
 (k) H.-w. with a broad black marginal border nearly reaching middle of wing and having on underside, small, submarginal, greyish white triangular spots *lofua* (127)
 H.-w. without such border (l)
 (l) Discal spot in h.-w. area 4 lies nearer to cell than that in 3 or 5 (m)

- Discal spot in h.-w. area 4 lies not nearer to cell than that in
3 or 5 (u)
- (m) F.-w. without discal spot in area 1b *nohara halali* (128)
F.-w. with discal spot in area 1b (n)
- (n) Ends of nervules at apex of f.-w. not markedly black on the
ground-colour (o)
Ends of nervules in f.-w. markedly black (p)
- (o) A fairly broad black apex in f.-w. Extremity of abdomen white
leucopyga (157)
A fairly broad black apex in f.w. Extremity of abdomen not
white *intermedia* (part) (159)
F.-w. apex narrowly black. Extremity of abdomen not white
mansya (134)
- (o) F.-w. apex broadly black, with a white subapical patch
intermedia (part) (159)
F.-w. apex broadly black, no subapical white . . . *leucopyga* (157)
F.-w. apex narrowly black, no subapical white . . . *mansya* (134)
- (p) H.-w. margin above, with well-marked black arches on wings
enclosing spots of ground-colour (q)
H.-w. margin above, black, with at most a trace of pale inter-
nervular marks (r)
- (q) Black spots of both wings large and well developed
guillemei (117)
Black spots very small *onerata* (135)
- (r) H.-w. nervule ends markedly black for some distance from
margin *atolmis* (part) (137)
H.-w. nervule ends not so (s)
- (s) F.-w. discal spots rounded and not confluent
nohara punctellata (129)
F.-w. discal spots more or less quadrate and confluent . . . (t)
- (t) Spot in h.-w. area 4 touches that in 5. Expanse about 48 mm.
nohara pseudatolmis (129)
Spot in h.-w. area 4 nearer base than, and not touching that
in 5. Expanse about 56 mm. *nohara nohara* (128)
- (u) F.-w. black, rather thinly scaled in middle, and having a scarlet
inner marginal patch in 1a, 1b, and part of 2. No subapical
red patch (v)
F.-w. not so marked (w)
- (v) F.-w. at apex without red streaks . . . *egina egina* (part) (106)
F.-w. at apex with red streaks . . . *egina f. harrisoni* (107)
- (w) H.-w. beneath with quadrate greenish spots on the black border (1)
H.-w. beneath with spots on the black border which, inwardly, are
either pointed or rounded (y)
- (1) Black spots large, quadrate and confluent. *egina medea* (107)
Black spots rounded and separate (2)

- (2) *F.-w. ground-colour blackish or dusky* . . . *egina egina* (106)
F.-w. ground-colour reddish *egina areca* (107)
- (w) *H.-w. margin on underside encloses square spots the inner edge of which is neither rounded nor pointed* (x)
Spots of h.-w. underside margin rounded or pointed on inner edge (y)
- (x) *H.-w. spots large, quadrate, and confluent* . . . *egina medea* (107)
H.-w. spots small, rounded, and separated . . . *egina areca* (107)
- (y) *F.-w. underside ground-colour orange ochreous with a white subapical patch. H.-w. underside ground-colour white*
hypoleuca (92)
- Underside not so coloured (z)
- (z) *On h.-w. underside the discal spots form a regular row which proceeds from costa to area 4 in a line parallel to apical margin, then bends sharply inwards at an angle of less than 45°, and runs straight across to inner margin. Between this row and the more basally placed spots are red splashes which form a more or less broken though characteristic red band* . . . (a')
- Spots of h.-w. underside not forming such a pattern* . . . (e')
- (a') *F.-w. with a white subapical patch* *wigginsii* (206)
F.-w. without a white subapical patch (b')
- (b') *F.-w. apex broadly black without spots* *anacreon f. induna* (198)
F.-w. apex narrowly black with spots or streaks of ground-colour or paler (c')
- (c') *F.-w. apical spots or streaks so large as almost to displace the black, leaving such colour only on nervule ends and on margin* *anacreon speciosa* (198)
Apical spots or streaks well surrounded with black . . . (d')
- (d') *Pale apical spots but slightly developed. Black spots of rest of wings very small* *anacreon bomba* (198)
Pale apical spots (streaks) well developed. Black spots of both wings large *anacreon anacreon* (198)
- (e') *F.-w. with either faintly indicated or very small spots* . . . (f')
- F.-w. with well-developed spots* (g')
- (f') *H.-w. margin rather broad and formed of large black rings enclosing more or less distinct spots of ground-colour (orange red). Discal spots of f.-w. absent or exceedingly faint*
acrita pudorina (144)
- ♀ *may be orange red to greyish black.*
- H.-w. margin narrower and black, with, at most, microscopic indications of paler spots. F.-w. discal spots small but quite black and distinct* *chambezi* (132)
- (g') *F.-w. nervules in apical region very distinctly blackened* (h')
- F.-w. nervules in apical region not blackened* (l')

- (h') F.-w. without discal subapical spots *periphanes* f. *acritoides* (140)
 F.-w. with discal subapical spots (i')
- (i') F.-w. with black apical patch (j')
- F.-w. without black apical patch (k')
- (j') H.-w. margin narrowly black, with spots of ground-colour
 periphanes periphanes (139)
 H.-w. margin broadly black without spots of ground-colour
 periphanes f. *melaina* (139)
- (k') H.-w. margin narrowly black with spots of ground-colour
 periphanes f. *beni* (139)
 H.-w. margin broadly black without spots of ground-colour
 periphanes f. *umida* (140)
- (l') F.-w. with discal subapical spots (m')
- F.-w. without discal subapical spots (n')
- (m') F.-w. without black apical patch . *acrita manca* (part) (144)
 F.-w. with black apical patch *lualabae* (155)
- (n') Apical black 9-10 mm. deep. F.-w. spots, especially the outer
 spot in area 1b, very small or absent . *chaeribula* * (153)
 Apical black patch very variable but at most not so deep as in
 the above. Outer spot in f.-w. 1b well developed . (o')
- (o') Spots in f.-w. cell, on discocellular, and in area 2 are so large as
 to be almost or quite confluent . . . *acrita bellona* (144)
 These spots not so large (p')
- (p') F.-w. with a white or whitish subapical band *acrita ambigua* (143)
 F.-w. without such band (q')
- (q') Central process of last dorsal abdominal plate short
 acrita littoralis (144)
 Central process of last dorsal abdominal plate long
 acrita acrita † (143)
 acrita manca (part) (144)
 acrita bella (144)
- (p') *Genital plate in the form of a short chitinous cylinder*
 acrita manca (144)
 Genital plate broad, carinate, and bifid . *acrita ambigua* (143)
 acrita littoralis (144)
 acrita acrita (143)

VII.

- F.-w. with hind marginal spots at least in 1b and 2 . . . (a)

* Owing to the variability of *acrita* it is not possible to give absolutely constant characters of difference between it and this species. Occasionally some examples of *acrita* have no spots in f.-w. 1b, but in these the apical black is only about 5 mm. deep.

† It is not possible to completely separate the forms of *A. acrita* on merely outward characteristics, or indeed in any other manner, with absolute certainty. See under *A. acrita* in descriptive portion.

[Occasional examples of *stenobea* have f.-w. hind marginal spots ; see (f).]

- F.-w. without hind marginal spots (i)
- (a) F.-w. with distinct black internervular rays on the apical region (b)
- F.-w. without such internervular rays (c)
- (b) Spots of h.-w. margin underside (if present at all) are whitish, narrow, and streak-like, being enclosed by fine black transverse internervular lines which are straight and not arched
- atergatis* (part) (188)
- Spots of h.-w. margin underside large, their inner edges rounded, being enclosed by black well-arched lines . . . *oncaea* (174)
- [*A. equatorialis anaemia* sometimes has f.-w. submarginal spots, but can be distinguished by its pale, very delicately scaled f.-w.]
- (c) H.-w. marginal border above, not sharply defined, merely dusky with an indication of blackish rings (d)
- H.-w. with well-defined dark hind-marginal border. (e)
- (d) F.-w. sepia-black (sometimes with yellowish subapical marks)
- natalica pseudogina* (192)
- F.-w. dull red (greyish towards apex, with yellow markings)
- natalica abadima* (192)
- (e) F.-w. discal spots widely separated from end of cell (f)
- F.-w. discal spots close to, or confluent with end of cell (h)
- (e) *F.-w. discal spots widely separated from end of cell* (f)
- F.-w. discal spots close to, or confluent with end of cell*
- natalica natalica* (192)
- (f) F.-w. apical black narrow and well defined
- caecilia pudora* (182)
- [Occasional examples of *stenobea* would be entered here, but they would be distinguished from *caecilia* by the much broader basal black and the absence of a spot in h.-w. area 3.]
- F.-w. apical black broad and inwardly suffused (g)
- (g) Ground-colour white to pink or dull red . . . *caecilia caecilia* (182)
- Ground-colour uniformly clay-yellow *marnois* (184)
- (h) A grey transverse band in apical area beyond discal spots
- natalica umbrata* (192)
- Without such grey band *natalica natalica* (192)
- (i) F.-w. with black internervular streaks in apical area (j)
- F.-w. without such streaks (q)
- (j) Inner edge of h.-w. marginal border is very markedly sinuous, and the margin between nervules is somewhat indented, especially towards anal angle, so that the border has an undulating appearance (k)
- Border not having such appearance (m)

- (k) Without a whitish or partially transparent subapical patch
doubledayi sykesi (171)
 With such whitish or partly transparent patch (l)
- (l) Ground-colour dark brick-red . . . *doubledayi arabica* (172)
 Ground-colour orange red . . . *doubledayi doubledayi* (171)
 (l) Ground-colour chocolate brown . . . *doubledayi arabica* (172)
 Ground-colour dull reddish to grey . . . *doubledayi doubledayi* (171)
- (m) H.-w. marginal border above, black, well defined, and without spots, or at most with a faint indication of such spots . (n)
 H.-w. marginal border above, formed of delicate black arches not always complete at inner edge (p)
- (n) Ground-colour of f.-w. red . . . *braesia f. regalis* (part) (169)
 Ground-colour of f.-w. not red (o)
- (o) F.-w. very thinly scaled. Ground-colour faintly ochreous. Spots small *equatorialis anaemia* (177)
 F.-w. generally fully scaled. Ground-colour pinkish-ochreous. Spots large *axina* (part) (180)
- (o) F.-w. very thinly scaled. Ground-colour faintly ochreous. Spots small *equatorialis anaemia* (177)
 F.-w. generally fully scaled. Ground-colour pinkish ochreous to grey. Spots small or large . . . *equatorialis equatorialis* (177)
axina (180)
- [I can find no perfectly constant character to distinguish these two ♀♀, but in *axina* the inner edge of h.-w. marginal border is almost always more sharply defined than in *equatorialis equatorialis*.]
- (n) A well-marked grey submarginal band in f.-w. 5, 4, and 3.
 Ground-colour red. Expanse about 60 mm.
braesia f. regalis (part) (169)
 Without such grey band. Ground-colour not red. Expanse about 50 mm. or less *axina* (part) (180)
- (p) Line of discal subapical spots in f.-w. 4, 5, and 6 makes, outwardly, an acute angle with costa. Wings thickly scaled
ella (179)
 Line of discal subapical spots in f.-w. 4, 5, and 6 makes, outwardly, a right or obtuse angle with costa. Wings very thinly scaled *equatorialis equatorialis* (177)
- (q) F.-w. discal spots close to, or confluent with end of cell . . . (1)
 F.-w. discal spots smaller and well removed from end of cell (3)
- (1) F.-w. spots beyond end of cell not contiguous *intermedia* (part) (159)
 F.-w. spots beyond cell contiguous (2)
- (2) F.-w. subapical patch white *mima* (167)
 F.-w. subapical patch pale but not white . . . *rhodesiana* (166)
- (3) F.-w. apical black narrow (4)
 F.-w. apical black broad (5)

- (4) *F.-w. ground-colour, where not suffused with black, very uniform right up to margin* *stenobea* (190)
F.-w. with more or less distinct tendency to orange spots towards hind margin *aglaonice* (186)
- (5) *H.-w. discal spot in 2 some distance from base of that area*
caldarena (161)
H.-w. discal spot in 2 in angle at base of that area
pudorella detecta (164)
- (q) *Distal half of abdomen white* (r)
Distal half of abdomen not white (s)
- (r) *F.-w. with a well-defined subapical white patch* *mima* (part) (167)
 [Some forms of *caldarena* have distal part of abdomen white, but there is no white patch in f.-w.]
F.-w. without white patch *rhodesiana* (166)
- (s) *A broad smoky black basal suffusion reaching at least to middle of cell in both wings* *stenobea* (190)
Without such suffusion (t)
- (t) *A broad white subapical patch in f.-w.* *mima* (part) (167)
Without such patch (u)
- (u) *Only two h.-w. discal spots (one in 6 and one in 7). A V-shaped black spot in middle of cell on underside, apex outwards*
aureola (142)
More than two h.-w. discal spots. Central spot of h.-w. cell not V-shaped (v)
- (v) *H.-w. spots almost always small and obsolescent, and in any case far removed from outer margin* *aglaonice* (186)
H.-w. spots always well developed, at least on underside, and the most distally placed are nearer to margin than to cell (w)
- (w) *Discal spots in f.-w. areas 4 and 5 are close to cell and the spot in 3 much more distally placed* *intermedia* (part) (159)
Discal spots in f.-w. 4 and 5 are much further removed from cell, and lie almost, or quite, in a straight line with that in 3. (x)
- (x) *Wings fully scaled and quite opaque. Spot in h.-w. area 2 is somewhat removed from the base of that area* *caldarena* (161)
Wings thinly scaled and somewhat translucent. Spot in h.-w. area 2 is in the angle at base of that area. (y)
- (y) *F.-w. with a broad blackish apical patch* *pudorella detecta* (164)
F.-w. without such patch (only slightly blackened at apex)
pudorella pudorella (163)

VIII.

- H.-w. margin on underside black, with a sharply defined inner edge and pale triangular marginal spots (no submarginal spots), no striation* (a)
H.-w. margin on underside not plain black, with only marginal

- spots. Striated, or the dark colour produced inwardly as red or black internervular marks, at least in areas 2 and 3 . . . (c)
- (a) Little or no basal black in f.-w. area 1b . . . *lumiri* (219)
 With basal black in f.-w. area 1b, at least along lower half of that area (b)
- (b) Basal black of f.-w. forms a patch, the outer edge of which is more or less continuous with that of the h.-w. basal black, and is not deeply indented, on the median, by the reddish ground-colour *uvui uvui* (217)
 Basal black of f.-w. is deeply indented on the median by the ground-colour *bonasia alicia* (221)
 [Also *bonasia banka*, and sometimes *bonasia bonasia*, but the latter is distinguished by character *a'*.]
- (b) *A. uvui* ♀ has the h.-w. border beneath bearing broad brown internervular marks and very faint indications of marginal pale spots.
A. bonasia alicia ♀ has the border deeply striated, but may usually be recognised by the paucity of basal black in f.-w.
- (c) F.-w. with a broad black apical patch bearing three small semi-transparent subapical spots in areas 4, 5, and 6 . . . *fornax* (309)
 F.-w. not so marked (d)
- (d) H.-w. underside bears at costa a crimson triangle enclosed by a black line. Base of triangle on costal nervure. Ground-colour of h.-w. lemon-yellow *excelsior* (215)
 H.-w. underside not so marked (e)
- (e) H.-w. margin beneath bears broad red internervular marks. That in area 4 is not, or very little, shorter than that in 3, and is not heavily bordered with black (f)
 H.-w. margin beneath without broad red internervular marks, or if with such marks that in area 4 is very much shorter than that in area 3, or at least is heavily bordered with black (g)
- (f) F.-w. without a separated subapical patch of the ground-colour, and h.-w. with a well-developed row of discal spots . . .
zitja (part) (204)
 F.-w. with a separated subapical patch of ground-colour, and h.-w. without discal spots *goetzi* (213)
- (g) H.-w. border beneath bears long internervular rays which are bifurcated at margin and enclose pale spots, such spots being for the most part wider before than at the margin . . . *althoffi* (251)
 (This species is polymorphic. For the various forms see descriptive portion.)
 If h.-w. border beneath bears long bifurcated rays, the pale spots they enclose are triangular and widest at the margin . . . (h)

- (h) The edges of the pale h.-w. discal band are practically parallel, the outer edge showing no tendency to be angulated at nervule 3 *oberthüri* (249)
 The edges of pale h.-w. band are not parallel, the outer edge being slightly or greatly angulated at nervule 3 . . . (i)
- (i) F.-w. has little or no basal black (j)
 F.-w. with basal black (p)
- (j) F.-w. with a completely separated subapical patch of ground-colour (or paler) (k)
 F.-w. with ground-colour (or paler) not separated off to form a patch (m)
- (k) Apical patch in the form of long narrow streaks paler than ground-colour *terpsichore rangatana* (240)
 Apical patch same tint as ground-colour and not in long narrow streaks (l)
- (l) H.-w. underside with a central band of red more or less definitely enclosed by narrow transverse black streaks
terpsichore f. ventura (240)
 H.-w. underside with rounded and separated black spots
terpsichore terpsichore (239)
 ♀ ♀ of this species excessively variable. See description.
- (m) Ground-colour of both wings pale creamy ochreous
terpsichore ochraceus (240)
 Ground-colour not pale creamy ochreous (n)
- (n) No discal spots in h.-w. *terpsichore f. subserena* (239)
 With discal spots in h.-w. (o)
- (o) H.-w. underside suffused in centre with brownish scales
terpsichore f. intermedia (240)
 H.-w. underside not so suffused . . . *terpsichore f. rougeti* (239)
- (p) F.-w. basal black with outer edge regular and not deeply indented at median (q)
 F.-w. basal black deeply indented at median, or at least the median nervure not blackened (s)
- q) Paler patches of both wings red *uvui balina* (217)
 Paler patches of both wings yellow (r)
- (r) Pale patches very large. Outline of f.-w. basal black not forming an angle with that of h.-w. ditto *viviana* (233)
 Pale patches small. Outline of f.-w. basal black makes an angle with that of h.-w. ditto *cabira karschi* (230)
- (s) H.-w. upperside with little or no black at base, or if with an appreciable amount of black, then also having a deep orange triangular marginal spot in each internervular space . . . (t)
 H.-w. upperside with a triangular basal black patch . . . (w)
- (t) Ground-colour pale creamy ochreous or nearly white
acerata tenella (235)

- Ground-colour yellow to red brown (u)
- (u) F.-w. without apical patch separated off from ground-colour *acerata acerata* (235)
- F.-w. with separated apical patch (v)
- (v) Ground-colour yellow to orange *acerata vinidia* (235)
- Ground-colour red brown *acerata brahmsi* (235)
- (w) F.-w. basal black after extending for some distance along nervure 1, does not bend upwards towards the cell (x)
- F.-w. basal black after extending for some distance along nervure 1, bends upwards towards cell (a')
- (x) The subbasal black spots on underside of h.-w. do not form a double row enclosing spots of scarlet (y)
- Subbasal black spots of h.-w. underside form a double row containing scarlet spots (z)
- (y) Ground-colour very pale. H.-w. margin on underside narrow
bonasia alicia f. *tenelloides* (221)
- Ground-colour not so pale, underside with a deep striated margin *bonasia alicia* f. *cabiroides* (221)
- (z) Pale patches of both wings yellow *cabira cabira* (229)
- F.-w. inner marginal patch and h.-w. central band red or reddish *cabira apecida* (229)
- (a') F.-w. with a yellow subapical patch (b')
- F.-w. with a red subapical patch (c')
- (b') H.-w. central band red *sotikensis sotikensis* (227)
- H.-w. central band, or at least its inner marginal half, pale yellow *sotikensis rowena* (227)
- (c') On h.-w. underside, three large black spots at bases of areas 6, 5, and 4 beneath the outer spot in 7
sotikensis supponina (227)
- H.-w. with spots not so arranged (d')
- (d') F.-w. basal black after extending along nervule 1 ends in an upwardly directed point (which rarely reaches cell)
bonasia bonasia (220)
- F.-w. basal black after extending along nervule 1 has a blunt or bifurcated termination *sotikensis katana* (227)

IX.

- F.-w. with transparent or partially transparent areas or spots, at least in 6, 5, and 4 (a)
- F.-w. without transparent or partially transparent areas
buschbecki (291)
- (a) F.-w. with three very small, well-defined, semitransparent spots in 6, 5, and 4. A rather larger similar spot at base of 2.
 Remainder of f.-w black brown *newtoni* (285)
- F.-w. not so marked (b)

- (b) F.-w. with a large well-defined spot in cell, distinctly separated from subapical spots (c)
F.-w. without such spot in cell (e)
- (c) The f.-w. cell spot and that at base of area 2 fully scaled with lemon-yellow. The h.-w. underside internervular rays reach the margin in a fine point *melanoxantha* (288)
F.-w. cell spot and that at base of area 2 are transparent or very sparsely scaled with whitish. The h.-w. underside rays end well before margin (d)
- (d) H.-w. central band yellow *mairessei mairessei* (286)
H.-w. central band red *mairessei dewitzi* (286)
- (e) F.-w. with cell and most of areas 2 and 1b fully scaled with red (f)
F.-w. basal red, if any, much broken up and obsolescent . . . (h)
- (f) F.-w. area 3 transparent, not scaled with red *igola* (part) (302)
F.-w. area 3 scaled with red or black (g)
- (g) Nervule ends on h.-w. underside broadly black with short thick black rays between *conradti* (289)
Nervule ends on h.-w. underside narrowly black with narrow rays between *aubyni* (304)
- (h) Black margin of h.-w. very narrow (not more than 2 mm.)
peneleos (part) (268)
[A. *peneleos* rarely comes into this section, the rays nearly always fully reaching the margin.]
Black margin of h.-w. more than 2 mm. wide (usually about 4 mm.) (i)
- (h) F.-w. cell transparent *penelope translucida* (281)
F.-w. cell not transparent (1)
- (1) H.-w. central band yellowish white *penelope f. exalbescens* (281)
H.-w. central band red (2)
- (2) Base of h.-w. underside reddish brown *penelope f. penella* (281)
Base of h.-w. beneath, but little, if at all, darker than central band (3)
- (3) Ground-colour of h.-w. beneath yellowish *penelope penelope*
Ground-colour of h.-w. beneath silvery grey
penelope f. argentea (281)
- (i) F.-w. with a large red spot in areas 1b and 2, and a very small transparent spot in 3 (sometimes absent). Three small transparent subapical spots. Rest of f.-w. black brown
penelope penelope (281)
F.-w. spots in 1b and 2 transparent, and a very large transparent spot in 3 (j)
- (j) F.-w. cell also transparent, with an indication of a black spot in middle. H.-w. central band of medium width
penelope translucida (281)

F.-w. cell fully scaled with black, except occasionally at extreme end (k)

(k) H.-w. central band very narrow (about 4 mm.)

penelope derubescens (281)

H.-w. central band so broad as to leave a black margin of only about 3 mm. *penelope vitrea* (281)

X.

F.-w. with a peculiar pattern formed as follows. Cell and a short distance beyond it sepia. A central band of tawny brown outwardly deeply identate on the nervules. Outer half of wing sepia. An irregular spot near base of area 2 and a V-shaped spot beneath it in 1b alciope alciope (322)

F.-w. with a similar pattern, but with a white suffusion of the central band alciope f. cretacea (323)

X.

F.-w. bears subapical spots in 6, 5, and 4, and discal spots in 1b and 2, just as in species of Sections VI or VII . . . (a)

F.-w. not bearing such spots (m)

(a) F.-w. bears large submarginal spots in 1b and 2, and the h.-w. ditto at least in 1c, 2, and 3 (b)

No submarginal spots (d)

(b) Central band of h.-w. red *rogersi rogersi* (61)

Central band of h.-w. not red (c)

(c) H.-w. with a whitish central band *rogersi lamborni* (62)

H.-w. central band not differentiated, the whole ground-colour of both wings being sepia-brown . . . *rogersi f. salambo* (61)

(d) H.-w. discal spot in 4 stands nearer to cell than that in 3 or 5 (e)

H.-w. discal spot in 4 stands not nearer to cell than that in 3 or 5 (i)

(e) H.-w. underside with a black border bearing orange spots (f)

H.-w. margin without orange spots (g)

(f) Red of f.-w. not extending beyond subapical spots .

perenna perenna (261)

Red of f.-w. extending beyond subapical spots

perenna thesprio (262)

(g) H.-w. with a white inner marginal patch *pharsalus vuilloti* (257)

H.-w. without white patch (h)

(h) F.-w. with a white or whitish band beyond the subapical spots, the red ground-colour not extending into apical area

pharsalus pharsalus (256)

F.-w. without white subapical band, the corresponding area being occupied by an extension of the red ground-colour

pharsalus f. pharsaloides (256)

- (i) F.-w. with a white subapical band (j)
 F.-w. without a white subapical band (l)
- (j) Ground-colour of f.-w. white *encedon f. lycia* (210)
 Ground-colour of f.-w. tawny (k)
- (k) H.-w. with a white patch *encedon f. alcippina* (210)
 H.-w. without a white patch *encedon encedon* (209)
- (l) Nervules ending in broad black triangles at margin. H.-w.
 with a white patch *encedon f. radiata* (211)
 Nervules not so. No h.-w. white patch *encedon f. दौरa* (210)
- (m) F.-w. may be brown or black with a subapical pale patch or
 spots and an inner marginal pale patch, or the inner mar-
 ginal and subapical pale patches may be confluent forming a
 broad angulated pale central band (n)
 F.-w. not so marked (r)
- (n) F.-w. with a broad angulated confluent band *alciope* (322)
 F.-w. with subapical and inner marginal pale marks separated (o)
- (n) *F.-w. with a broad confluent pale band* (1)
F.-w. with subapical and inner marginal pale marks separated (2)
- (1) *F.-w. band orange, h.-w. band white* *alciope* ♀ *f. aurivillii* (323)
Both bands orange *alciope f. tella* (323)
alciope ♀ *f. macarina* (322)
- [In *macarina* the pattern, especially of f.-w. is much less definite
 than in *tella*.]
- (2) *F.-w. subapical pale marks include a spot near margin in area 4,*
well separated from a series of three spots close to costa (3)
F.-w. subapical pale spots only separated by the nervules, and so
forming a patch (p)
- (3) *H.-w. with a broad dark border* *conjuncta* (319)
H.-w. without a broad dark border *ansorgei* (318)
- (o) F.-w. subapical pale marks include a spot near margin in area 4
 well separated from a series of three spots close to costa
conjuncta (319)
 F.-w. subapical spots only separated by the nervules, and so
 forming a patch (p)
- (p) Expanse not exceeding 48-50 mm. The dark transverse band
 from costa to hind margin in f.-w. which cuts off the sub-
 apical patch is reduced towards margin to so fine a point
 that the subapical patch is only just separated from the
 inner marginal *disjuncta* (321)
 The f.-w. subapical patch is separated from the inner marginal
 by a dark transverse band of considerable width, and though
 the end of the band may be somewhat broken by a whitish
 streak it is not reduced to a point as above. Expanse almost
 always much more than 50 mm. (q)
- (q) H.-w. dark border fairly sharply defined inwardly, or in the

forms in which it is not so, then the f.-w. subapical patch is very narrow, rarely exceeding about 3.5 mm. in width. Border in h.-w. never so broad as almost to reach end of cell *esebria* * (331)

H.-w. dark border if present is not sharply defined inwardly except in forms in which it is so broad as almost to touch cell, and in such cases the f.-w. subapical patch is much more than 3.5 mm. in width *jodutta* * (327)

(r) F.-w. perfectly transparent and scaleless except for a narrow, intensely black apical and hind marginal border and a very little black at base *semivitreata* (300)

F.-w. not as above (s)

(s) H.-w. cell beneath with not more than one spot (t)

[Some examples of *lycoa* have a second spot in cell, but this is usually accompanied by a blackish streak. Or the streak may be broken up giving the appearance of several spots.]

H.-w. cell beneath with more than one spot (w)

(t) F.-w. with a subapical patch of three elongated transparent spots *servona* (part) (292)

[*A. servona* nearly always has more than one spot in cell. See under (w).]

F.-w. without such subapical transparent patch (u)

(u) H.-w. beneath with a narrow elongated central yellow patch and an inner marginal red brown patch *oreas* (298)

H.-w. beneath not so marked (v)

(v) Distal outline of h.-w. pale patch has a tendency to be angulated at area 4, giving the patch a somewhat quadrate appearance.

This angulation is most easily seen beneath *johnstoni* (339)

[*A. johnstoni* is polymorphic. For forms see descriptive section.]

Distal outline of h.-w. pale patch is regularly rounded

lycoa (part) (336)

[*A. lycoa* is also polymorphic. See descriptions.]

(w) Both wings fully scaled without any partially or wholly transparent patches or spots (x)

Transparent or partially transparent areas in one or both wings (z)

(x) F.-w. without any red or orange marks *lycoa* (part) (336)

F.-w. with red or orange marks (y)

(y) F.-w. with elongated red patches between the nervules (1)

(1) H.-w. discal spots large and forming a band which extends well beyond cell *orina orina* (263)

H.-w. discal spots not extending well beyond cell (2)

* For the various named forms of *esebria* and *jodutta* see descriptive portion. It is scarcely possible to give concise characters which constantly differentiate between them, and some little experience is required before the two species can be separated at sight.

(2) *H.-w. spots confluent in a large black basal patch**orina orineta* (264)*H.-w. spots though obscured by basal suffusion are obviously not confluent* *parrhasia f. oppidia* (278)(y) *F.-w. with elongated red patches between the nervules* *orina* (263)*F.-w. with orange spots between the nervules* . . . *insularis* (345)(z) *F.-w. fully and thickly scaled with the exception of three small quadrate well-defined transparent or semitransparent subapical spots in 6, 5, and 4* *safie antinorii* (316)*F.-w. not so* (1)(1) *On the underside the base and margin of h.-w. are dark brown enclosing between them a narrow ochreous central band**peneleos pelasgius* (269)*H.-w. beneath not so marked* (d')(2) *The transparent areas are confined to three or four very small, very sharply defined subapical spots in f.-w.* (a')*Transparent areas not so confined or at least considerably elongated* (d')(a') *F.-w. ground-colour reddish brown* . . . *amicitiae* (317)*F.-w. ground-colour brown black* (b')(b') *H.-w. with a red band* *peneleos pelasgius* (269)*H.-w. without a red band* (c')(c') *H.-w. with a fairly broad yellow central band* *safie safie* (315)*H.-w. with a very narrow, or no band.* . . *safie antinorii* (316)(d') *Large forms with an expanse of wing of about 60-90 mm.**F.-w. for the most part transparent but having two irregularly outlined transverse oblique dark bands, one from costa at a point just beyond middle of cell, to the hind angle. The second just beyond cell. (These bands may be rather faint.) Apex and hind margin usually somewhat darkened* (e')*Expanse of wing usually much less. In any case pattern not as above* (g')(e') *H.-w. fully scaled all over* *vesperalis* (48)*H.-w. partly transparent* (f')(f') *F.-w. dark bars and h.-w. basal scaling heavily developed**pentapolis epidica* (46)*F.-w. dark bars and usually h.-w. basal scaling lightly developed**pentapolis pentapolis* (46)(g') *H.-w. with a quite well-defined transparent or semitransparent marginal border more or less dusted with black scales* . . (h')*H.-w. with margin at least as fully scaled as rest of wing* . . (i')(h') *H.-w. border broad and the blackish dusting quite evenly distributed. (Tarsal claws equal)* . . . *quirinalis* (308)*H.-w. border narrow, the blackish dusting concentrated towards anal angle. (Tarsal claws unequal)* . . . *orestia* (305)

- (i') Base of h.-w. above not broadly blackened and discal spots well developed (j')
- Base of h.-w. above broadly black or if not then without well-developed discal spots (l')
- i') Base of h.-w. above not suffused with black or brown (1)
- Base of h.-w. above suffused with black or brown (6)
- (1) H.-w. with a central pale yellowish band
- peneleos helvimaculata (269)
- H.-w. without such band (2)
- (2) At h.-w. margin on upperside the dark internervular rays project inwardly for some distance (3)
- H.-w. margin without such well-developed rays on upperside (4)
- (3) H.-w. discal spots well developed peneleos peneleos (268)
- H.-w. discal spots not developed parrhasia f. leona (278)
- (4) H.-w. border not continuously black but bearing black triangles at nervule ends sambavae (314)
- H.-w. marginal border continuously black (5)
- (5) Outer spot of h.-w. cell lies at or beyond origin of nervule 2
- strattipocles (311)
- Outer spot of h.-w. cell lies distinctly before origin of nervule 2
- masamba (312)
- (6) H.-w. without a red, yellow, or white central area
- peneleos f. sepia (269)
- H.-w. with such area (7)
- (7) Central area almost white peneleos f. lactimaculata (269)
- Central area yellow (8)
- Central area red (10)
- (8) Yellow area narrow with nearly parallel edges circeis (297)
- Yellow area broad with outer edge curved (9)
- (9) F.-w. with patches of lemon yellow in areas 1b, and 2
- servona f. limonata (293)
- F.-w. areas 1b and 2 sparsely scaled with white
- servona servona (292)
- (10) H.-w. with V-shaped black spots on underside midway between cell and border. Usually with a pink central band
- baxteri (part) (267)
- H.-w. without such V-shaped spots and never with a pink band (11)
- (11) F.-w. with elongated reddish streaks in 1b, 2, and 3
- parrhasia parrhasia (277)
- F.-w. with a rounded reddish spot in 2 but no streaks
- servona rubra (293)
- (j') H.-w. marginal border not continuously black but bearing black triangles at nervule ends sambavae (314)

- H.-w. marginal border continuously black (k')
- (k') Outer spot of h.-w. cell lies at or beyond origin of nervule 2
strattipocles (311)
 Outer spot of h.-w. cell lies distinctly before origin of nervule 2
masamba (312)
- (l') H.-w. without a yellow or red central patch or band
lycoa lycoa (336)
 H.-w. with a yellow or red central patch or band (m')
- (m') H.-w. with a yellow central patch or band (n')
- H.-w. with a red central patch or band (o')
- (n') H.-w. central patch narrow, its edges nearly straight *circeis* (297)
 H.-w. central patch broad, at least its outer edge curved
servona (292)
- (o') Transparent portion of f.-w. confined to three large elongated
 subapical spots *baxteri* (part) (267)
 Transparent portion of f.-w. not so confined (p')
- (p') Tarsal claws equal (q')
- Tarsal claws unequal (r')
- (q') F.-w. with an even and regular red basal flush extending to
 end of cell *igola* (part) (302)
 F.-w. with basal red (if present at all) much broken up
 especially by a black mark in middle of cell *parrhasia* (277)
- (r') Central portion of h.-w. on underside is not paler than base or
 margin *grosvenori* (276)
 Central portion of h.-w. underside is paler than base or
 margin (s')
- (s') Nervule ends on h.-w. underside not broadly dusted with black
 so as to have a swollen appearance *peneleos peneleos* (part) (268)
 Nervule ends on h.-w. underside broadly dusted with black
 so as to have a swollen appearance
peneleos peneleos (part) (268)
pelopeia (274)

GROUP I.

1. *ACRAEA ZONATA*. Pl. VIII, f. 11.

Acraea zonata, Hewitson, Ent. Mo. Mag., xiv, p. 154 (1877);
 Aurivillius, Rhop. Aeth., p. 83 (1898).

= *makupa*, Gr.-Smith, Ann. Nat. Hist. (6), 3, p. 126 (1889);
 Smith & Kirby, Rhop. Exot., 9 (*Acraea*), p. 3, pl. 1, f. 6
 (1889).

GERMAN E. AFRICA (Dar-es-Salaam, Mikindani); BRITISH E.
 AFRICA (Rabai, Witu, Wasin, Zanzibar, Pemba I.).

♂. Expanse about 55 mm. Wings thinly scaled, orange brown.
 Nervures well marked, dark brown. F.-w. costa and base, black.

A large transverse black spot about middle of cell. An irregular band of black spots crossing the discal area at the discocellular nervules and extending to the hind angle. Apical area and hind margin rather broadly dusted with black and bearing eight rather suffused spots of the ground-colour. H.-w. black at base and slightly dusted with black on margin. A very minute black dot at point where nervure 5 leaves the cell. An irregular zigzag discal band of black extending from the costa to the anal angle. Thorax black, spotted with pale brown beneath. Abdomen black above, brown beneath, and bearing segmental spots of pale brown. Claws unequal.

The underside resembles the upper but has a vitreous surface and the markings are less distinct.

♀. I have seen only two ♀♀ of this species. One is in the general collection of the Berlin Museum and differs from ♂ examples only in the fact that in the f.-w. the space between the central bar and the apical brown is transparent.

The other is in Mr. J. J. Joicey's collection and resembles the ♂ but is larger, paler, and duller.

Acraea zonata appears to be a rather rare insect. The type in the Hewitson collection was taken at Zanzibar. The example figured by Grose-Smith is from Mombasa, one specimen in the Oxford collection is from Rabai, whilst the Tring collection contains examples from Dar-es-Salaam and Pemba I., and the British Museum specimens are from Zanzibar and Witu. *A. zonata* is certainly closely allied to *rabbaiæ*. The claspers in the ♂ armature are without the large processes so characteristic of that species.

2. ACRAEA RABBAIÆ. Pl. VIII, f. 10.

Acraea rabbaiæ, Ward, Ent. Mo. Mag., x, p. 152 (1873); Oberthür, Etud. d'Ent., 3, p. 25, pl. 2, f. 1 (1878); Trimen, S. Af. Butt., 1, p. 133 (1887); Monteiro (metam.), Del. Bay p. 219 (1891); Aurivillius, Rhop. Aeth., p. 83 (1898).

PORTUGUESE E. AFRICA (Delagoa Bay, Mozambique); GERMAN E. AFRICA (Islikundani, Usarama); RHODESIA (Chirinda).

A. rabbaiæ mombasæ, subsp.

Gr.-Smith, Ann. Nat. Hist. (6), 3, p. 127 (1889); Smith & Kirby, Rhop. Exot., 21 (*Acraea*), p. 14, pl. 4, f. 9, 10 (1892); Aurivillius, Rhop. Aeth., p. 83 (1898).

BRITISH E. AFRICA (Rabai, Zanzibar, Sabaki R. Witu); GERMAN E. AFRICA (Islikundani, Usarama).

A. rabbaiae rabbaiae.

♂. Expanse about 64 mm. F.-w. transparent. H.-w. transparent or thinly scaled. Nervures well marked, dark brown. A more or less well-marked series of black spots across centre of f.-w. confluent round the discocellulars. One crescentic spot in 2, below junction of 3 and the median. One spot below this and slightly nearer base, in 1b, and another, more rounded spot in same area, near junction of 2 and the median. One spot in area 11 just before end of cell. Apices slightly dusted with brownish ochreous. H.-w. more or less scaled with whitish. Margin with large internervular ochreous spots bordered inwardly with a blackish suffusion. Underside the same. Thorax black with a few reddish spots above and spotted with pale ochreous below. Abdomen black with pale lateral spots and brown beneath. Claws unequal.

♀. Resembles the ♂.

The extent of the scaling of the h.-w. in *rabbaiae* varies from a condition approaching transparency to a fairly thickly scaled surface. These scales are, in all the examples I have seen, distinctly paler in colour than in the subsp. *mombasae*.

A. rabbaiae mombasae, subsp.

This form resembles *rabbaiae* but the black markings in the f.-w. are less well defined and the h.-w. is always thickly scaled with creamy brown scales distinctly darker than in *rabbaiae*. The apices of the f.-w. are darker and frequently bear traces of a marginal band of pale spots.

The example of this form figured and described by Grose-Smith has both wings moderately scaled and this is apparently the case in the remaining examples in his collection. Most of the specimens I have seen show a greater transparency in the f.-w.

The form appears to be confined to the neighbourhood of Mombasa, Rabai, and Zanzibar. I have seen no specimen of the typical *rabbaiae* taken so far north as this. The latter occurs at Delagoa Bay and inland to Chirinda.

The genital armature is the same in both forms.

The type is in the collection of M. Oberthür. The larva of *rabbaiae* is briefly referred to by Mrs. Monteiro in "Delagoa Bay" as "bright red with black spines."

3. *ACRAEA SATIS*. Pl. XIV, ff. 14, 14a, 14b, 14c.

Acraea satis, Ward, Ent. Mo. Mag., viii, p. 35 (1871); Af. Lep., p. 6, pl. 6, f. 1 (1875); Mabille, Hist. Nat. Mad. Lep., 1, p.

115, pl. 10, f. 10, 11 (1885-7); Aurivillius, Rhop. Aeth. p. 90 (1898); Aurivillius, Voeltzkow Exp., p. 315 (1909).
= *corona*, Staudinger, Exot. Schmett, 1, p. 83, pl. 33 (1885).

GERMAN E. AFRICA (Dar-es-Salaam, Lindi, Bondu, Bagamoyo, Saadani, Mafia I.); BRITISH E. AFRICA (Rabai, Zanzibar, Witu); RHODESIA (Chirinda); ZULULAND.

♂. Expanse 55-70 mm. F.-w. thinly scaled. Base and costa black, area 1b sometimes yellowish. A short black basal streak in 1b. From base to end of cell, base of area 2, two-thirds of 1b, and a slightly less extent of 1a, bright red. The red area bounded by an irregular discal band of black from subcostal to hind angle, and darkest on end of cell. A rather broad sinuous transverse black mark in cell near end. Areas 4, 5, and 6, from transverse band to middle of discal area, red, followed by a slight dusting of blackish scales. All the f.-w. black markings may be very faint, the spot on discocellular being the least liable to obsolescence. Remainder of f.-w. semitransparent, scales being slightly reduced, scattered, and sometimes replaced by bifid hairs. H.-w. red, yellowish at inner margin. A hind marginal black border bearing a variable number of internervular spots of the ground-colour. An irregular discal band of black sometimes enclosing spots of the ground-colour. Base black, with a sub-basal spot in 7, one in cell, and one in 1a.

Underside, f.-w. scaled only at base and costa. H.-w. as on upperside, but scaled only at base, margins, and discal band. Costal and inner marginal scales dull ochreous, black spots as on upperside. Hind margin as on upperside but with seven large rounded dull ochreous spots. Thorax black spotted with yellowish beneath, and with two to four whitish spots above. Abdomen black above, paler below, and laterally and ventrally spotted with yellowish. Claws unequal.

♀. Expanse about 84 mm. Markings similar to those of ♂ but the red colour everywhere replaced by white. In f.-w. the cell spot may coalesce with discal band, or may enclose a small white spot. Abdomen white spotted.

Acraea satis is a remarkably distinct species not only in the character of the markings but also in the structure of the genitalia. A very peculiar modification of the parts has taken place. The true uncus and claspers have become much reduced, whilst the dorsal and ventral abdominal plates have become greatly modified, so as to resemble false uncus and claspers respectively.

Mabille describes this species as occurring in Madagascar, but I have been unable to find any authentic example from that island. M. Oberthür has specimens so labelled, but informs me that in this case the labelling is not reliable, and that he is of opinion that the species occurs only on the mainland.

GROUP II.

4. *ACRAEA PENTAPOLIS*. Pl. XIV, f. 2.

Acraea pentapolis, Ward, Ent. Mo. Mag., viii, p. 60 (1871); Af. Lep., p. 7, pl. 6, f. 2 (1873); Aurivillius, Rhop. Aeth., p. 111 (1898); Lathy, Trans. Ent. Soc., p. 186 (1903); Neave, Novit. Zool., xi, p. 346 (1904); Aurivillius, Ann. Mus. Genov., p. 3 (527), (1910).

= *thelestis*, Oberthür, Etud. d'Ent., 17, p. 17, pl. 3, f. 33 (1893); Aurivillius, Rhop. Aeth., p. 111 (1898).

S. LEONE; GOLD COAST; ASHANTI; NIGERIA; TOGO; CAMEROON; GABOON; CONGO (Bopoto, Luebo, Leopoldville); UGANDA.

A. pentapolis epidica, subsp.

= *A. epidica*, Oberthür, Etud. d'Ent., 17, p. 18, pl. 3, f. 27 (1893); Aurivillius, Rhop. Aeth., p. 111 (1898).

GERMAN E. AFRICA (Pangani, Usambara, Ukami Mt.).

A. pentapolis pentapolis. Pl. VI, f. 1. (larva).

♂. Expanse 60-76 mm. Wings semitransparent, due to absence of scales. F.-w. costa, apex, and hind margin powdered with brownish. Several ill-defined dusky marks varying much in intensity but usually consisting of the following. A broad irregular mark in cell over origin of 2, a blackish mark on discocellulars, a series of rudimentary marks beyond cell in the form of an oblique discal band of spots in 6, 5, 4, and 3, a mark at base of area 2 and beneath it running downwards and outwards a mark in 1b. In the same area a short indistinct longitudinal streak at base.

H.-w. with a dusky powdering round hind margin, and more or less evident darker internervular rays showing their greatest development in 2, 1c, and 1b. Lower half of cell, base of 3, basal half of 2, and the greater part of 1c, 1b, and 1a covered with scales which vary in colour from pale lemon-ochreous to brick red. In some cases this patch is very fully developed and of definite outline, whilst in others it is merely indicated. Numerous black spots corresponding to those on underside but varying much in size and number.

Underside. F.-w. almost devoid of scales. H.-w. as above but the yellow or red patch paler and less developed. Black spots very variable in number. In the case of maximum development the following may be observed. A spot in 9, a sub-basal and a central (very small) in 7, one at extreme base of 5, and a double spot at base of 4, two in cell before middle, three or four discal spots progressively larger in size, in 6, 5, 4, and 3, a large spot at base of 2 followed by a spot in 1c and 1b, these three nearly in a straight line, but that in 1c slightly nearer base. A basal and a subbasal in 1c, ditto in 1b, and a basal and two other spots in 1a.

Head black with a few whitish dots and two tufts on collar, thorax black with whitish marks, abdomen black above with whitish segmental lines and lateral spots. Claws unequal.

♀ like the ♂ and presenting the same variations of pattern.

In some examples of this species there is a faint reddish or yellowish flush in the f.-w. especially along the main nervures. Long series have lately been bred by Mr. Lamborn near Lagos, and presented by him to the Oxford Museum. It is clear from these examples that Oberthür's *thelestis* cannot be distinguished from *pentapolis* even as a form. From that author's description the principal distinction between *thelestis* and *pentapolis* is the presence in the former of a tawny rather than yellowish patch in h.-w. In the series before me every gradation of colour may be observed, from a mere whitish appearance to a definite brick-red patch.

A. pentapolis epidica, subsp.

This is the extreme eastern form of the species and differs in the following respects. It is generally much larger, having an expanse of 80-90 mm. The blackish markings in f.-w. are much darker and more definite. In the h.-w. the basal spots are large and confluent, forming a conspicuous basal black mark. The patch of pale scales is lemon-ochreous and well developed, and there are usually a few tawny scales on the hind margin on underside.

The larvae of the specimens received from Lagos may be described as follows:—

Upper half dark umber brown with a few irregular dark markings on the upper part of each segment, and a whitish lateral mark on segments 4-12. Head reddish brown with a white, ventrally bifurcated, white line. Legs yellow at base,

extremities black. Pro-legs yellow. Spines all black. The dorsal pair on segment 2 longer than the rest and somewhat curved.

Pupa whitish with black lines representing nervures, antennae, legs, etc. A ventral, two lateral, and two dorsal rows of segmental black marks, each with a yellowish centre. From the inner or dorsal side of each of these centres in the two dorsal rows of spots, there arises a short blunt black process or spine. The general appearance of the pupa is as variable as that of the imago, sometimes the white and sometimes the black predominating.

A dipterous parasite emerged from one of the pupae.

5. *ACRAEA VESPERALIS*. Pl. XIV, f. 3.

Acraea vesperalis, Gr. Smith, Proc. Zool. Soc., p. 466 (1890); Smith & Kirby, Rhop. Exot., 19 (*Acraea*), p. 7, pl. 3, f. 1, 2 (1892); Aurivillius, Rhop. Aeth., p. 112 (1898); Grünberg, Sitzb. Ges. Nat. Fr., p. 150 (1910). (? *pentapolis*.)

S. LEONE; CONGO (Zongo, Mokoanga, Zambuiya to Albert Nyanza, Kassai R., Usongoda); UGANDA (Sesse I.). (?)

A. vesperalis catori, subsp.

Bethune-Baker, Ann. Nat. Hist., 14, p. 223 (1904); Dudgeon (*vesperalis*), Proc. Ent. Soc., p. liv (1909).

S. LEONE (Mano-Ronietta).

A. vesperalis vesperalis.

♂. Expanse 70–76 mm. F.-w. slightly brownish at base. Costa dusky brown passing into sepia at apex. From end of cell to apex, the whole of area 3, and the marginal part of areas 2, 1b, and 1a, sepia. A discal band of elongated transparent spots in 6, 5, and 4, and a trace of a transparent mark in 3. Cell, greater part of 2, nearly the whole of 1b, and 1a, transparent and devoid of scales. An irregular sepia patch in cell above origin of 2. Beginning at base of area 2 and ending at hind angle a sepia band about 2 mm. wide.

H.-w. black at base and having a hind marginal border of sepia brown about 4–5 mm. wide, its inner edge interrupted by the extension of the brown along the nervules and internervular rays. The remainder of the wing brownish ochreous of somewhat variable depth. Indications of the black spots of the underside are visible in the discal area.

Underside. F.-w. resembles upperside but the apical and hind marginal areas dusted with chestnut brown. H.-w. chestnut brown, of a rather richer tint towards base and inner margin. Nervules and internervular rays well marked, brownish black.

Black spots very variable. When attaining maximum development, usually as follows. One in 9, one in 8, two (small) in 7, the outermost just beyond origin of 7. Three just beyond cell in 5, 4, and 3. One at base of 5, and 4 on discocellulars, two in cell before the middle, one at base of 2 followed by one in 1c and 1b, all three in a straight line. A basal and a subbasal in 1c, a subbasal in 1b, and two spots near middle of 1a. Some irregular black at base of nervures.

Head and thorax black with a few pale dots. Abdomen black above, with pale segmental lines and lateral spots. Claws unequal.

♀ resembles the ♂.

A. vesperalis catori, subsp.

Differs from typical *vesperalis* in having the ground colour of h.-w. pale instead of brownish-ochreous.

A. vesperalis is so nearly allied to *pentapolis* that but for the fact that the h.-w. patterns are so consistently different, and also that both species occur in the same place without intermediates, I should have regarded them as two forms of the same species. The male armatures are in this case somewhat unsatisfactory guides though they do seem to show slight differences. Such differences are, however, much less than would appear from the figures on Plate XIV.

GROUP III.

6. *ACRAEA IGATI*. Pl. VII, f. 12.

Acraea igati, Boisduval, Faune Mad.,* p. 29, pl. 4, f. 3, pl. 5, f. 3 (1833); Staudinger, Exot. Schmett, 1, p. 83, pl. 33 (1885); Mabille, Hist. Nat. Mad. Lep., p. 82, 89, pl. 10, f. 1, 2 (1885-7); Oberthür, Etud. d'Ent., 13, p. 13, pl. 4, f. 22 (1890); Aurivillius, Rhop. Aeth., p. 85 (1898).

MADAGASCAR (Ambinanindrano).

♂. Expanse about 60 mm. Wings transparent, the transparency being caused by reduction in number and size of the scales. F.-w. slightly smoky towards costa and apex and with an orange brown basal suffusion extending to about the middle of the wing. H.-w. with about the same amount of basal orange suffusion. Some irregular black spotting at base, including a large well-rounded spot at base of area 1c, and an elongated narrow black spot at base of area 1b. In area 6 and 7 and between end of cell and margin, two large confluent black spots, and two somewhat

* The text is published separately. The plates are in the "Nouvelles Annales du Musée d'Histoire Naturelle, Paris."

similar but more elongated spots in areas 2 and 3. In some examples there is a small spot in area 5. Thorax black, spotted with white beneath. Abdomen black with white lateral segmental spots. Claws unequal.

♀. Expanse about 65 mm. The spots on the h.-w. are similar to those in the ♂ but that in area 5 is often larger. The orange suffusion in the f.-w. is replaced by pale yellow and that in the h.-w. by white. In some examples the coloured areas are entirely replaced by white.

Acraea igati is found only in Madagascar. Boisduval and Mabille describe it as frequenting wooded districts, and producing two broods, the first in April and May, the second in July and August. Boisduval states that it is found on Ste. Marie I. and on the mainland. He appears to have confused the sexes, describing the orange suffused form as the female. His figure is that of the male.

The male armature is peculiar, as will be seen from a reference to the figure in Plate VII. The velum is much larger than in *A. damii* and both uncus and claspers are more highly developed. The entire structure resembles that of the Australasian *A. andromache*.

7. *ACRAEA DAMII*. Pl. VII, ff. 11a, b, c.

Acraea damii, Vollenhoven, Pollen and Van Dam, Faune Mad., 5, Ins., p. 12, pl. 2, f. 4 (1869); Mabille, Hist. Nat. Mad. Lep., 1, p. 83, 88, pl. 10, f. 3, 4 (1885-7); Oberthür, Etud. d'Ent., 13, p. 12, pl. 3, f. 11-16 (1890); Aurivillius, Rhop. Aeth., p. 85 (1898).

= *percussa*, Keferstein, Jahrb. Akad. Erfurt (2), 6, p. 13, pl. 1, f. 1, 2 (1870).

= *masonala*, Ward, Ent. Mo. Mag., ix, p. 3 (1872); Af. Lep., p. 10, pl. 7, f. 5 (1874).

MAYOTTA I.; COMORO I.; MADAGASCAR.

A. damii cura, subsp.

Gr. Smith (*A. cura*), Ann. Nat. Hist. (6), 3, p. 126 (1889); Smith & Kirby, Rhop. Exot. (*Acraea*), p. 2, pl. 1, f. 5 (1889); Aurivillius, Rhop. Aeth., p. 86 (1898); Smith & Kirby, Rhop. Exot., 3 (*Acraea*), p. 24, pl. 7, f. 4 (1901).

BRITISH E. AFRICA (Rabai, Zanzibar); GERMAN E. AFRICA (Dar-es-Salaam); (?) KATANGA.

f. *nidama*. Suffert, Iris., p. 19 (1904).

Type from DAR-ES-SALAAM. (Liable to appear wherever *cura* occurs.)

A. damii damii.

♂. Expanse 50-60 mm. Wings transparent owing to reduction in number and size of scales. F.-w. slightly suffused from base to about middle with brick red. Nervures reddish brown. H.-w. more densely scaled with brick red from base to about midway between end of cell and margin. Five black spots at base more distinct on underside. One behind the precostal, 2 in area 1c, and one in 1a and 1b, respectively. One large rounded spot in area 7 near middle of costa, one rather larger and nearer margin in area 6, one very small spot below this, in area 5. Two large spots somewhat produced distally and placed in areas 2 and 3 respectively. Underside similar but spots smaller and more sharply outlined. H.-w. dusted with whitish scales. Thorax black, with a few pale spots above and below, abdomen black above and yellow beneath, with whitish lateral segmental spots. Claws unequal.

♀ similarly marked but wanting the brick red suffusion, this being replaced by a dusting of white scales. Expanse 65-75 mm.

Acraea damii is a very variable insect. The above description is taken from an average pair in the Oxford collection. M. Oberthür (*l.c.*) figures one ♂ and five ♀♀. The ♂ example has an elongate spot in the h.-w. cell; in the ♀♀ the number of discal spots varies from four to eight, and in some cases the spots are different in opposite wings of the same individual. The author further points out that in two examples the neuration is abnormal, and occasionally the two ♀♀ have the reddish colouring of the ♂♂. In one ♂ example in the National collection the brick red suffusion extends completely over both wings, whilst the h.-w. spots are reduced in number to three. M. Oberthür states that the type of Ward's *masonala* is in his collection and that there is no doubt that it is an example of *damii*.

Keferstein's figures (*l.c.*) are of ♂ and ♀ examples taken in Madagascar by Herr Tolin in 1862. The ♂ comes nearest to Oberthür's fig. 11, and the ♀ to fig. 16.

The species is probably extremely distasteful. It is described as settling on certain trees in large numbers, when it can easily be picked off with the fingers.

It occurs in Mayotta, Comoro, and Madagascar, examples from the latter region being usually smaller than those from Comoro.

The ♂ armature is quite distinctive, especially in the

possession of two small horn-like processes on the margin of the velum, or ventral abdominal plate.

Acraea damii cura, subsp.

♂. Expanse 50–60 mm. Resembles *damii* but the red suffusion is usually of greater extent, sometimes extending nearly to the margin in the f.-w. In the h.-w. it is often rather sharply defined leaving a transparent margin of moderate width. The black spots on the h.-w. are more sharply outlined than in *damii damii*, but exhibit as in the latter considerable variation in size and number. Grose-Smith's type, which is described in the text and on the plate as a ♀, appears in fact to be a ♂. It has eight black spots on the h.-w. An example before me from the Tring collection has five spots (= *nidama*, Suff.), whilst others have rather conspicuous basal spots, notably a large rounded one in area 1c.

♀. Resembles ♂, but is rather larger and has the red replaced by creamy yellow. The black spots are larger, and the base of the h.-w. is much suffused with black. An example before me has a small black spot in the h.-w. cell near the base, and in *one wing* another spot near the end of cell. Occasionally the ♀ is red like the ♂.

I have followed Aurivillius in regarding *cura* as a form of *damii*, though in view of its geographical distribution it must be considered a subspecies of the Madagascar form. It occurs only on the mainland and Zanzibar. There are fifteen examples in the National collection, five of which are ♀♀ and the localities given are, Zanzibar, Dar-es-Salaam, and Rabai. The type was received from Mombasa, and there are examples in the Tring collection labelled "Katanga, Tanganyika," and though the exact meaning of the locality is rather vague, it would appear that the species has a considerable westward range. I have dissected out the genitalia of one of these examples and find no difference from those of *damii* taken in Madagascar.

8. *ACRAEA KRAKA*. Pl. VII, f. 15.

Acraea kraka, Aurivillius, Ent. Tidskr., 14, p. 272, pl. 6, f. 3 (1893); Rhop. Aeth., p. 86 (1898).

CAMEROON (Bibundi, Bonge); FERNANDO Po.

♂. Expanse about 50 mm. Wings transparent. Transparency caused by the scales being reduced to fine hairs. F.-w. black at base and dusted with black for a short distance along the

costa. Slightly darker suffusion at apex caused by a reappearance of scales which however are still very narrow and elongated. A reddish basal suffusion (probably bright red in fresh examples) extending to nearly half the length of the cell and distally to nearly the whole length of area 1a. A black spot in the cell about the middle, and two spots in area 1b, one near the base and one about the middle. H.-w. black at base and with a basal reddish suffusion extending a little beyond the end of cell. Numerous black spots arranged as follows. Two in area 7, two in cell, and two in 1b, and 2, three in 1c, one in 3, 4, 5, and 6, and one near the base in 1a.

The underside is similar but without the reddish suffusion which only shows through from the upperside. A fourth spot is visible in 1c at the base.

Thorax black, abdomen black above and brown beneath, with brown lateral segmental spots. Claws unequal.

♀. Expanse about 62 mm. According to Aurivillius' figure (*l.c.*) there is a small additional spot in area 2 in the f.-w. The basal suffusion is described as ochreous.

The three ♀ ♀ from which Aurivillius described the type were taken in May and July (1891) at Bibundi and Bonge in N.W. Cameroon, and are in the Stockholm Museum. There are six ♂ examples in the National collection taken at Fernando Po, and a few specimens in the Tring collection.

The above are the only examples known to me. The female genital armature is sufficiently distinct in form though showing a fairly close resemblance to that of *A. cerasa*. The transparency of the wings in this latter species is however produced in a different manner. Aurivillius regards *kraka* as a near ally of *quirina*, and in support of this it may be noted that in both species the transparency is caused in the same manner, though on the other hand the structure of the respective male armatures is very different.

9. *ACRAEA EUGENIA*. Pl. IV, f. 13 (♀).

Acræa eugenia, Karsch, Berl. Ent. Zeit., 38, p. 196 (1893)

Aurivillius, Rhop. Aeth., p. 86 (1898).

TOGOLAND (Bismarckburg); ANGOLA (Canhoca).

♂. Expanse about 49 mm. Wings translucent and well rounded. F.-w. with yellow nervures and nervules and very sparsely dusted with sepia, and a few yellowish white scales.

These are of the normal size and the transparency is due to a reduction in their number. H.-w. with an ill-defined basal area of whitish or light yellowish scales shaded into a dusky marginal border. Black spots as on underside.

Underside, f.-w. almost devoid of scales. H.-w. as above but with fewer scales. Black spots as follows. Four spots graduated in size in 7, 6, 5, and 4 lying beyond cell and parallel to apical margin. A larger spot at base of 3, and of 2. Beneath the latter a spot in 1c followed by a smaller spot in 1b rather further from margin. A subbasal in 7, two in cell, the second over origin of nervule 2, a large subbasal in 1c, and beneath it a small spot in 1b, and a subbasal in 1a. A little irregular black at base.

Head black with two white dots between the eyes and two yellowish tufts on collar. Thorax black with a few pale marks. Abdomen black above with white lateral spots. Claws unequal.

♀ resembles ♂ but larger (about 54-60 mm.). One ♀ in the Berlin Museum has the spot in area 5 of h.-w. almost obsolete.

The only example I have seen besides those in the Berlin Museum is a single ♀ in the Tring collection. The species appears to be rare, and I have had no opportunity of making a preparation of the ♂ armature. The ♀ plate is of peculiar structure and the orifice of the *bursa copulatrix* appears to be somewhat eccentric, as in *A. horta*.

10. *ACRAEA CERASA*. Pl. VIII, f. 14. Pl. XVI, f. 1.

Acraea cerasa, Hewitson, Exot. Butt. (*Acraea*), pl. 2, f. 10 (1861); Trimen, S. Af. Butt., 1, p. 139 (1887); Smith & Kirby, Rhop. Exot., 21 (*Acraea*), p. 11, pl. 4, f. 1 (non f. 2), (1892); Aurivillius, Rhop. Aeth., p. 86 (1898).

NATAL; GERMAN E. AFRICA; BRITISH E. AFRICA (Nairobi, Kikuyu, Machakos).

♂. Expanse 37-52 mm. F.-w. semitransparent, due to reduction of scales to hairs; black scaling at base and for a short distance along inner margin. Costa and hind margin dusted with brownish black scales. A brick red basal suffusion extending to end of cell and downwards and outwards nearly to hind angle. A variable number of black spots, usually one a little beyond middle of cell and one at extremity of cell on discocellulars. Sometimes a small spot near base below median, and rarely two on edge of red area, one on each side of nervule 2. H.-w. brick red, thinly scaled, and more transparent towards margin. A variable number of spots arranged, when all present, as follows. A submarginal row of six or

seven parallel to hind margin and becoming very minute towards apex. A discal row of seven, the first in 1b and in a straight line with the next two which are much larger, the fourth in area 3 and somewhat variable in position, the next three in areas 4, 5, and 6, the middle one more distally placed. Two spots in area 7, two in cell, and one basal spot in 1a, 1b, and 1c. Some of these spots, especially the submarginal row, may be absent. Underside devoid of scales but spots in h.-w. smaller and blacker. Thorax and abdomen black above and paler below, with yellowish lateral spots. Claws unequal.

♀. Usually resembles ♂ but is somewhat larger and has the red areas paler and duller. One example from Nairobi has all the red replaced by pale ochreous.

The larva and pupa are fully described by Trimen (*l.c.*). From this description the following is taken.

Larva, livid purplish above, with a dull greenish dorsal streak edged by a series of small white marks, followed by a second lateral series of similar marks at edge of purplish area. Below this, olive greenish, underside pale green. Head black, striped with white. The usual dorsal and lateral spines.

Pupa, orange yellow, with bright orange black-ringed spots, neuration of wings and a dorsal stripe, black.

A. cerasa is very variable in the number and size of the black spots. The submarginal spots in h.-w. are often entirely absent, whilst many of the others may be absent or very small.

11. *ACRAEA CERITA*. Pl. IV, f. 9 (♂).

Acraea cerita, E. M. B. Sharpe, Ann. Nat. Hist., 7, xviii. p. 75 (1906).

TORO REGION.

♂. Expanse 46 mm. F.-w. basal half brick red, extending not quite to end of cell, projecting into the basal part of area 2, and occupying about half of areas 1b and 1a. This red area is sharply defined and is enclosed outwardly by a dusting of black scales forming a transverse bar right across the wing from costa to inner margin which it meets just before inner angle. Costa and apex also dusted with blackish. Outer half of wing transparent and very iridescent, the scales reduced to fine hairs. The hind margin very slightly darker. In the cell a small black spot over origin of nervule 2. In area 1b a small spot lying in the line between the cell spot and the hind angle. In the same area another

spot midway between base and nervule 2. H.-w. brick red with a very little blackish at base and a narrow grey-black hind marginal border. A few black spots as on underside.

Underside. Both wings almost scaleless. H.-w. spots as follows. Two in 7, the second just beyond origin of nervule 7. Two in cell on one wing and one on the other, the second spot just before origin of nervule 2. In areas 3, 2, 1c, and 1b a row of discal spots lying almost in a horizontal line and beyond these in 3, 2, and 1c traces of submarginal dots are visible with a lens. A subbasal spot in 1c, 1b, and 1a, that in 1b more distally placed than the others.

Head and thorax black with a few pale dots, abdomen black above with yellowish white lateral dots. Claws unequal.

The foregoing description and the figure on Plate IV are from the type now in Mr. J. J. Joicey's collection. This example is the only one I have seen and bears the label Entebbe 1906, though I have reason to suppose it was taken in the Toro region. I strongly suspect it to be a form or aberration of *A. cerasa*. I have not seen an example of the latter from Entebbe, although I have handled many thousands of specimens from that locality. The specimen of *A. cerita* remains unique and until further material becomes available I must allow it to stand as a species.

12. *ACRAEA UNIMACULATA*. Pl. VII, f. 16.

Acraea unimaculata, Gr. Smith, Novit. Zool., v. p. 350 (1898);

Aurivillius, Rhop. Aeth. (= *humilis*), p. 86, 1898; Smith &

Kirby, Rhop. Exot. (*Acraea*), vi. pl. 6, f. 1, 2, 3 (1901).

BRITISH E. AFRICA (15 m. N. of Kisumu, Kabras, Nandi).

♂. Expanse about 50 mm. F.-w. transparent owing to reduction of scales to hairs. Costal margin and apex slightly dusted with black scales. Basal area dull red (probably brighter in life) extending nearly to end of cell, just beyond origin of first median, and nearly to hind angle. Base slightly dusted with black. H.-w. of the same red as f.-w. A semitransparent margin, slightly dusted with black scales, nearly $\frac{1}{8}$ in. wide at apex and tapering to nothing at inner angle. Base blackish. Underside devoid of scales and vitreous. Two black spots in cell, one in 1c and two or three basal spots at junction of wing and thorax. All except the inner cell spot may be absent. Thorax and abdomen black above, paler beneath, with yellowish lateral segmental spots. Claws unequal.

♀. Expanse 56 mm. Resembles ♂ but red areas paler and duller and less well defined outwardly. Spots of h.-w. underside may be entirely absent.

The types which are in the Tring collection were taken at Kabras in British E. Africa. Co-types from Rau, Nandi country. In his catalogue of the African Rhopalocera Prof. Aurivillius placed this species as a synonym of *A. humilis*, not having then seen either insect. Its nearest allies are *A. cerasa*, and *A. kraka*. The similarity between the male armature and that of the latter species entitles *unimaculata* to be regarded as the eastern representative of *kraka*, though at the same time the differences are sufficient to give the two forms specific rank. Until recently the only example known to me besides those in the Tring Museum was a ♀ in the Oxford collection, taken by Dr. Wiggins on the Uganda Ry. 15 m. N. of Kisumu. Latterly, however, the species has been taken in some numbers by Neave in British E. Africa, on the Yala R., N. Kavirondo.

13. *ACRAEA ITURINA*. Pl. VII, f. 13.

Acraea iturina, Gr. Smith, Proc. Zool. Soc., p. 465 (1890);
Smith & Kirby, Rhop. Exot., 21 (*Acraea*), p. 12, pl. 4, f. 3,
4 (1892); Grünberg, Sitzb. Ges. Nat. Fr., p. 148 (1910).

S. CAMEROON; BELGIAN CONGO (near Ft. Beni); UGANDA
(Sesse I, Albert to Victoria Nyanza).

A. iturina kakana, subsp.

Eltringham, Novit. Zool., xviii. p. 150 (1911).

ABYSSINIA (Adie Kaka, Kaffa).

A. iturina iturina.

♂. Expanse about 50 mm. F.-w. rather transparent clouded with smoky brown along costa and hind margin. This clouding varies in intensity in different examples. Transparency caused by narrowing of the scales. The basal area having a brownish red suffusion (probably bright red in fresh specimens) extending nearly to end of cell and two-thirds of length of inner margin. A large black spot in the cell somewhat beyond the middle, and varying considerably in intensity. (One example before me has a minute black spot in area 2, near the cell, and a black powdering on the discocellulars.) A small black linear spot at base of area 1b.

H.-w. red with semitransparent smoky brown margin considerably widened near apex. Base black. Two black spots in area 7 rather close together. A discal row of seven spots, the first four usually smaller than the rest and the fourth nearer the

margin. Two spots in the cell, that nearer the base often very small. One basal spot in 1a, 1b, and 1c, the second of these sometimes confluent with the last discal spot. Nervures 6 and 7 arise from a common stalk. Underside vitreous and without coloured scales, the h.-w. spots repeated. Thorax and abdomen black above, pale below, and with lateral pale spots. Claws unequal.

♀. The only ♀ I have seen resembles the ♂ and is of the same size, but the wings are more transparent and the spot in f.-w. cell is almost divided longitudinally.

A. iturina kakana, subsp.* Pl. IV, f. 14 (♂).

♂. F.-w. base and costa blackish. Apical half semitransparent, basal half including cell, dull orange red; apex, hind margin, and distal edge of red area rather more thickly scaled with black than the remainder. The transparency is caused by reduction in width of the scales. The red colour extends slightly into area 3, about half the length of areas 1b, and 2, and nearly to hind angle in area 1a.

H.-w. dull orange red; a basal aggregation of confluent black spots; a discal band of large confluent spots, the first in area 7 about the middle, the remainder lie almost in a straight line across the wing, except that in area 3, which is more distally placed; a blackish hind marginal border about 2 mm. wide at apex, becoming rather suddenly narrower at nervule 5, and tapering to anal angle.

Underside resembles the upper, but is sparsely scaled, and the red areas are dull pink; the h.-w. basal spots are somewhat less confluent and can be resolved into a large subbasal spot in 7, two confluent subbasal spots in cell, one in 1c, 1b, and 1a; in the latter area also a minute dot beneath end of nervule 1a; a little black at origin of main nervures.

Head, thorax, and abdomen black, the latter with indistinct brownish lateral spots; tarsal claws asymmetrical. In f.-w. nervures 6 and 7 arise not from cell but from a common stalk about 1 mm. long as in *iturina*.

This form differs from *iturina* in the absence of the spot in f.-w. cell, the deeper colour and greater extent of the red areas, and the larger size of the spots.

* Since the above was printed I have had an opportunity of making a further careful comparison of the type with specimens of *iturina*, with the result that I incline to the belief that *iturina kakana* may ultimately prove to be a distinct species. Pending the acquisition of further material there seems, however, no objection to allowing it to retain the above position.

The type of *A. iturina*, now in the Joicey collection, is a ♂. The locality in Grose-Smith's original description is somewhat vaguely given as the "great forest of Central Africa." Two ♂♂ in the Tring collection are labelled "2 days from Fort Beni," and a third "15 days" from the same locality. A ♀ in the Oxford collection was taken in 1905 in Uganda between Lakes Albert and Victoria Nyanza. The species may readily be distinguished from other somewhat similar forms by the peculiarity of the h.-w. neurulation. This feature is faithfully represented in the figure in Rhop. Exot. The claspers of the ♂ armature have a peculiar toothed structure on the inner edge. Aurivillius (*l. c.*) suggests that *iturina* may be a variety of *cerasa*. It is however quite a distinct species, as shown by the structure of the male armature and the complete reduction of the scales to hairs in the latter species.

14. *ACRAEA QUIRINA*. Pl. VII, f. 18. Pl. XVI, f. 6.

Acraea quirina, Fabricius (*Pap.*), Spec. Ins., 2, p. 36 (1781); Godart (*A.*), Enc. Méth., 9, p. 231 (1819); Karsch, Berl. Ent. Zeit., 38, p. 193 (1893); Aurivillius, Rhop. Aeth., p. 86 (1898); Butler, Proc. Zool. Soc., p. 923 (1900); Aurivillius, Ann. Mus. Genov., p. 19 (512), (1910).

= *dice*, Drury (*Pap.*), Ill. Exot. Ins., 3, p. 23, pl. 18, f. 3, 4 (1782); Herbst, Naturf. Schmett., 5, p. 24, pl. 83, f. 3, 4 (1792).

Trimen (*A.*), Rhop. Afr., Austr., p. 95 (1862).

SENEGAL; S. LEONE; LAGOS; LIBERIA; TOGOLAND; GABOON; CONGO (Mukenge, Kassai, Kwidgwi I.); GERMAN E. AFRICA (Dar-es-Salaam); BRITISH E. AFRICA (Kisumu).

A. quirina rosa, subsp. nov.

BRITISH E. AFRICA (Kitui, Rabai).

A. quirina quirina.

♂. 34-50 mm. F.-w. transparent, the transparency caused by the scales being reduced in width in the discal area and represented by hairs in the marginal area. Base powdered with black, and beneath the median a basal black streak extending nearly to a point below the origin of nervure 2. (Drury describes the f.-w. as having a round black spot below this streak but I have not seen an example with any spots on the f.-w.) The h.-w. is rosy red dusted with black at the base and having a broad well-defined transparent margin. Upon the red area are numerous black spots usually better defined in the ♀ (for position of these spots see description of ♀). The underside resembles the upper but there is a whitish basal suffusion in

the h.-w. Thorax and abdomen black above with lateral pale spots, and paler beneath. Claws unequal.

♀. Expanse 37-53 mm. Resembles the ♂, but the red of the h.-w. usually replaced by dull brown, though occasionally the ♀ is almost as brightly coloured as the ♂. In brown ♀♀ the underside of the h.-w. is whitish ochreous. The h.-w. black spots as follows. On the margin of the coloured area a row of seven internervular spots nearly parallel to the hind margin, those near costa sometimes obsolete. A discal row of eight internervular spots, the first in area 7, the spot in area 2 much nearer base than the rest. Eight basal spots, one in area 8, one in area 7, two in cell, two in area 1c, and one each in 1a, and 1b.

A common and widely distributed species occurring from Sierra Leone to the Kikuyu Escarpment.

A. quirina rosa, subsp.

Distinguished from the typical form by the greater extent of the red suffusion in the f.-w., reaching to end of cell and nearly to hind angle. Eight ♂ examples in the Hope Department, from British E. Africa (Kitui and Rabai). The male armature in *quirina* and its subspecies is characterised by the modification of the uncus into two hooks as large as the claspers. The ventral abdominal plate is large and contains a dense mass of hairs, probably of a glandular nature.

Speaking of *A. quirina* (or its subspecies), (Proc. Zool. Soc., p. 923, 1900) Butler quotes from the MS. of the collector Mr. R. Crawshay. "All these *Acraeinae* were taken in the gloom of the forest, flitting about feebly, and settling on the bushes. Spherical yellow ova." The locality was Ruarka R., Kikuyu, 5,500 ft. (April 1900).

15. *ACRAEA HOVA*. Pl. VII, f. 17.

Acraea hova, Boisduval, Faune Mad., p. 29, pl. 4, f. 1, 2 (1833); Blanchard, Hist. Nat. Ins., 3, p. 438, pl. 11, f. 1 (1840); Lucas in Chenu, Enc. Hist. Nat., p. 3, f. 6, pl. 27, f. 3 (1852); Guenée, Vinson Voy. Annex., p. 35 (1864); Ward, Af. Lep., p. 10, pl. 7, f. 6 (1874); Mabille, Hist. Nat. Mad. Lep., 1, p. 94, pl. 9, f. 1-3, pl. 9a, f. 6 (1885-7); Aurivillius, Rhop. Aeth., p. 87 (1898).

MADAGASCAR.

♂. Expanse about 75 mm. F.-w. semitransparent, due to scales being reduced in number but not in size. Base and basal part of hind margin black. Costa and hind margin slightly dusted with blackish. Basal area to slightly beyond end of cell, and extending downwards to hind angle, suffused with brick red.

A large ovate black spot in cell slightly beyond middle, a sub-linear spot on l.d.c., sometimes extending to u.d.c. A discal row of two to three spots, (sometimes absent) beyond cell in 4, 5, and 6. A spot in 2 and another in 3 near cell, and a larger spot in 1b near middle. H.-w. brick red, blackish along costa and creamy at inner margin. Black spots arranged as follows. On margin, indistinct spots at end of nervules, a submarginal row of seven spots parallel to margin, the first in 1c. A discal row of eight, the first in 1b, very small, and those in 2 and 3 much larger than the rest, seven or eight spots at or near base five of which form a subbasal row, the first and second (in 1a and 1b) small or obsolete, the fourth in the cell, the fifth in 7. Underside of f.-w. devoid of scales. H.-w. thinly scaled with milky white, spots smaller than on upperside, many absent altogether. Thorax black, spotted with reddish yellow beneath. Abdomen black above, reddish or yellowish beneath and with white lateral segmental spots. Claws unequal.

♀. Expanse 90 mm. Most examples resemble the ♂ but the red areas are paler and duller. Rarely the red is absent in f.-w. and replaced by creamy white in h.-w.

Mabille figures (*l. c.*) a curious aberration of the ♂ in which the spots are coalescent, forming curved and zigzag lines. The figure in Chenu's *Encyc. of Nat. Hist.* (un-coloured) apparently shows a very dark hind-winged aberration. Ward's figure, a ♀, is near Mabille's fig. 3, but has two black spots beyond cell in f.-w. which are absent in Mabille's figure.

This very distinct species is one of the largest of the genus. It is described by Mabille as comparatively rare, inhabiting wooded regions in Eastern Madagascar, and flying with rapidity in the glades. The structure of the ♂ armature is quite distinctive.

16. *ACRAEA ROGERSI** Pl. XIV, f. 17.

Acraea rogersi, Hewitson, Ent. Mo. Mag., x. p. 57 (1873);

Aurivillius, Rhop. Aeth., p. 110 (1898).

= *ehmcke*, Dewitz, Ent. Nachr., 15, p. 103, pl. 1, f. 6-8 (1889).

S. LEONE; GOLD COAST; CAMEROON; ANGOLA; CONGO (Kassai, Aruwini, Bopoto, Stanley Pool).

f. salambo. Gr. Smith, Ann. Nat. Hist. (5), 19, p. 62 (1887);

Smith & Kirby, Rhop. Exot., 10 (*Acraea*), p. 5, pl. 2, f. 3, 4

(1889); Karsch, Berl. Ent. Zeit., 38, p. 194 (1893). Auriv-

illius, Rhop. Aeth., p. 110 (1898).

(Localities as above.)

* The position of this species is difficult to decide. I am inclined to modify my original view and isolate it altogether.

A. rogersi lamborni, subsp. n.

LAGOS.

A. rogersi rogersi.

♂. Expanse 70–82 mm. F.-w. Sepia black, darker at base, costa, and in apical area. A red patch at hind angle occupying outer third of 1a, outer half of 1b (except just at margin), and extending slightly into 2. Large black spots as follows. One in cell above origin of 2, one on discocellulars occupying whole width of cell. Just beyond cell three subquadrate spots (the uppermost sometimes missing) divided by nervules 5 and 6, and beneath them a spot in 3. Beneath this and rather further from margin a large spot in 2, and in same area a second spot nearer margin. In 1b, a submarginal, a central, and a subbasal spot. H.-w. Base dark sepia, obscuring a mass of large black spots which correspond to those beneath. Beyond this a broad red band on which at inner edge are some spots lying beyond the basal black. On outer edge of the red area are eight round internervular black spots. In some examples only those in 3, 2, and 1c are present, in others each is produced outwardly into a broad black internervular mark. A dark sepia hind marginal band of variable width, its inner edge rather suffused. Underside f.-w. Dull ochreous sepia, with spots as above. Reddish at hind angle: Between the discocellular spot and the discal spots, and also beyond the latter, whitish. H.-w. Base as far as the inner edge of discal band dull red. Discal band greyish in 7 and 1b, remainder pale brown dusted with greyish, and with an outer row of spots as above but smaller. Margin dark sepia brown. The red basal area has the following black spots. One in 8 against precostal, two in 7, one in 6, 5, 4, 3, 2, two in cell before the middle, one on discocellulars, two in 1c, 1b, and 1a; those in 1b further from base than those in 1c and 1a. Some black at base of nervures.

Head black with a few white marks, thorax black, abdomen black above at base, with ochre yellow lateral spots, remainder ochre yellow. Claws unequal.

♀. Upperside resembles ♂ but the red is much fainter amounting usually to a mere tinge of colour. On the underside the h.-w. ground-colour is dusky ochreous with very little indication of hind marginal black. Some of the spots of outer row may be absent.

f. *salambo*.

♂. Like the typical form but without the red, though the basal part of f.-w. and the discal area of h.-w. have a rather

warm brown tinge. Underside pale sepia ochreous somewhat dark on f.-w. apex, and h.-w. base and margin.

♀. Like the ♂.

A. rogersi lamborni, subsp. n. Pl. VI, f. 2 (larva), f. 16 (pupa).

Long series of this form have lately been bred by Mr. W. A. Lamborn near Lagos and presented by him to the Oxford Museum.

The ♂ has the f.-w. sooty black, rather paler in the central area. H.-w. base and marginal border sooty black with a broad discal band of dusky cream colour. The spot near base of 3 usually absent. Underside f.-w. apical area to end of nervule 2 sepia grey with darker internervular rays, remainder pale greenish grey. H.-w. pale creamy grey with a yellowish tinge, and a faint pinkish tint at base of 1c, 1b, and 1a.

Head and thorax black with some whitish spots. Abdomen, basal half black with whitish segmental lines and lateral spots remainder pale creamy grey.

♀ resembles the ♂.

The larva of *A. rogersi lamborni* is dark brown somewhat blacker on the dorsal area, with a few irregular rather paler dorsal transverse markings, and has the usual spines which are all black and arise from black-brown tubercles. The base of the legs and prolegs is yellowish, remainder black. Head black with a white central line bifurcated ventrally, and a posterior white line where it joins segment 2.

The pupa differs from other *Acraea* pupae which I have examined. It is light brown in colour, and the usual black lines are wanting, except those outlining the antennae, and a trace of some of the nervular lines. There are two dorsal and two lateral rows of small black markings consisting of minute dots and short fine transverse streaks, and a ventral row of dots and streaks, the latter longitudinal. On the head are two short, blunt, widely separated, outwardly curved processes giving the pupa a "horned" appearance. There are very slightly raised dorsal abdominal tubercles visible only with a lens.

The species is not uncommon and is easily distinguished from other *Acraeas* by the large round black spots in h.-w.

There is one ♂ example in the Staudinger collection labelled German E. Africa, but the occurrence of the species in that region is extremely doubtful.

17. *ACRAEA RANAVALONA*. Pl. VII, f. 7. Pl. XVI, f. 2.

Acraea ranavalona, Boisduval, Faune Mad., p. 30, pl. 6, f. 3, 4, 5 (1833); Geyer, Hübner Zutr., 5, p. 31, f. 925, 926 (1837); Blanchard, Hist. Nat. Ins., 3, p. 438 (1840); Staudinger, Exot. Schmett., 1, p. 83 (1885); Mabille, Hist. Nat. Mad. Lep., 1, p. 92, pl. 9, f. 4, 5, pl. 9a, f. 5 (var.) (1885-7); Oberthür, Etud. d'Ent., 13, p. 11, pl. 5, f. 25-30 (1890); Aurivillius, Rhop. Aeth., p. 87, 88 (1898); Aurivillius, Voeltzkow Exp., p. 315 (1909).

= *manandaza* (part), Ward, Ent. Mo. Mag., ix. p. 147 (1872).

f. *maransetra*, Ward, Ent. Mo. Mag., ix. p. 2 (1872).

♀ f. *manandaza*, Ward, Af. Lep., p. 9, pl. 7, f. 1, 2 (1874); Oberthür, Etud. d'Ent., 13, p. 11, pl. 5, f. 23-24 (near) (1890) (*nec* Mabille l. c., pl. 9a, f. 5).

MADAGASCAR (Andranohinaly, Ste. Marie, N. Mahafaly, and generally); COMORO I.

A. ranavalona ranavalona.

♂. Expanse 40-50 mm. F.-w. nearly transparent owing to reduction in width of scales. These modified scales are rarely bifid and are attached to the wing in a partially upright position. A bright basal red suffusion bounded by a line drawn from costa about half way along the cell to a point just short of the hind angle. A slight dusting of black scales along costa and in apical region. Base slightly black. H.-w. bright rose-red with a very narrow semitransparent dusky margin ending at 1b and bearing five or six spots in areas 2, 3, 4, 5, 6 (7); the outer half of these spots is red and the inner half black, the black portion lying mainly on the red discal ground colour. In area 1c a somewhat smaller black spot in the red ground colour. A discal and basal series of black spots, placed as follows;—five discal spots beyond cell in 7, 6, 5, 4, and 3 respectively, and roughly parallel to hind margin, followed by three, more basally placed, in 2, 1c, and 1b. In addition to these, two in cell, one in 8 and 9, one in 7, two in 1c, one in 1b, and two in 1a. Underside resembles upper but f.-w. is devoid of scales, and h.-w. discal area is pinkish, due to white scales on the background of the red of the upperside. Thorax black with faint reddish lateral, and pale yellowish ventral spots. Abdomen shading into reddish, with red lateral spots and pale yellowish beneath. Claws unequal. The spots in the ♂ h.-w. are somewhat variable, especially those of the discal and basal area, these being more or less confluent in most examples but fairly well separated in others.

♀. Expanse 40–50 mm. (very variable). F.-w. like that of ♂ but red suffusion replaced by yellowish. H.-w. usually powdered with white scales, having the dusky marginal border bearing half black and half red spots as in ♂, though the border extends a little further towards the inner margin and has a well-developed black and red spot in area 1c. The discal black spots are well separated leaving an extra dot at base of nervure 5 (this dot is occasionally recognisable in ♂ examples). The basal spots and those of the cell are in various degrees of obsolescence, some of those nearest the base being altogether wanting.

From this normal appearance of the ♀ a long series shows practically every degree of red suffusion to a form which has as much red as the ♂. Ward's *manandaza* is a ♀ presenting the minimum amount of red.

A. ranavalona f. *maransetra*.

In this form the basal and discal spots are confluent. It would appear to be if anything commoner than the typical form.

Boisduval describes the species as generally found in the forest in Ste. Marie and on the mainland of Madagascar in April and May, reappearing in July and August. Fond of settling on grasses.

Mabille states that it is common all over Madagascar, flying during a large part of the year in woods and cultivated places, and having several broods.

The male armature is of very peculiar form and resembles that of no other *Acraea* except its near ally *machequena*.

It is a matter of some difficulty to unravel the confusion which has arisen in the synonymy of this species, owing to Ward's description of his *Acraea manandaza*. Boisduval's original description of the ♀ states that the base and nervules of the f.-w. are rufous and the h.-w. white or very rarely flushed with a reddish tinge. Ward received two alleged pairs of the species, stated to have been taken *in coitu*. Of the first pair both ♂ and ♀ were of the red type of coloration and this red ♀ is now known to be a somewhat rare variety, a figure of which will be found on Plate 9a, in Mabille's volume (Hist. Nat. Mad.). To this pair Ward assigned the original name *ranavalona*. His second "pair" (subsequently proved to be two ♀ ♀) he describes as having the "f.-w. transparent suffused with carmine,"

"hind-wing powdered with white, the outer margin bordered with carmine," "♀ colour and markings the same as ♂." These he regarded as a different species and gave them the name *manandaza*. Unfortunately his figures do not agree with his descriptions, but M. Oberthür (who possesses the types) states that one of them (the supposed ♀ of the "pair") is a large example rather less accentuated in coloration than fig. 23 of his Plate V, whilst the "♂" is an ordinary though small ♀. Now Oberthür's fig. 23 has an extremely faint pink tinge at base of f.-w. and a slight pink suffusion in h.-w. and therefore the true "*manandaza*" of Ward is a very faintly pink-tinged ♀ of *ranavalona*.

18. *ACRAEA MACHEQUENA*. Pl. VII, f. 8.

Acraea machequena, Gr. Smith, Ann. Nat. Hist. (5), 9, p. 62 (1887); Smith & Kirby, Rhop. Exot., 9 (*Acraea*,) p. 2, pl. 1, f. 3, 4 (1889); Trimen, S. Af. Butt., 3, p. 377 (1889); Monteiro, Del. Bay, Frontispiece, f. 9 (1891); Aurivillius, Rhop. Aeth., p. 88 (1898).

PORTUGUESE E. AFRICA (Delagoa Bay); RHODESIA (Chirinda); NYASSALAND (Mlanji Boma).

♂. Expanse about 50 mm. F.-w. semitransparent owing to reduction in width of scales, these are set in a partially upright position, and rarely bifid. Costa, apex, and sometimes discal area more or less faintly powdered with scales. Basal suffusion of dull or bright red extending from the costa at end of cell to the hind angle. Base black. H.-w. dull red or reddish ochreous, never so bright as in *ranavalona*, with a very narrow marginal border of blackish, much more heavily scaled than in *ranavalona*. Six internervular marginal spots half black and half red, the red portion lying on the black border and sometimes very indistinct, the black portion projecting into the discal ground colour. Black discal and basal spots arranged as in *ranavalona* but well separated, that at base of nervure 5 being usually quite distinct. The basal spot in area 7 of h.-w. often absent. A marked black basal suffusion not present in *ranavalona*.

The underside of h.-w. resembles the upper, but is very thickly scaled. Thorax and abdomen blacker than in *ranavalona*. Abdomen with yellowish lateral spots. Claws unequal.

♀. Expanse 50-60 mm. F.-w. either almost transparent, or with a brownish basal suffusion corresponding in area to the red of the ♂. H.-w. varying from semitransparent white (the normal form) to pale reddish, a slight black basal suffusion (not

present in *ranavalona*). Spots as in ♂ but smaller. Discal spot in area 7 sometimes absent. Underside as upper but almost devoid of scales except at the spots. Lateral abdominal spots white.

In distinguishing between *machequena* and its near ally *ranavalona*, Trimen states (*l. c.*) that in both sexes of the former the basal spot in area 7 is absent, and that in the ♀ the discal spot in the same area is also wanting. I find however that these characteristics are variable. One ♂ now before me has the basal spot well defined, whilst one ♀ has the discal spot. Some ♀ ♀ of *ranavalona* have both, though the basal spot seems to be always wanting in *machequena*. Perhaps the most constant features by which *machequena* may be distinguished from *ranavalona* are the greater extent of red or brown suffusion in the f.-w., the black basal suffusion in h.-w., the duller red of the h.-w. in the ♂ and of the hind marginal spots in both sexes.

The male armature is very like that of *ranavalona* but the claw-like claspers are slightly stouter, and the penis-sheath shorter.

19. *ACRAEA LIA*. Pl. VII, f. 10.

Acraca lia, Mabilie, Bull. Soc. Philom. (7), 3, p. 132 (1879); Hist. Nat. Mad. Lep., 1, p. 97, pl. 9a, f. 8, 8a (1885-7); Smith & Kirby, Rhop. Exot., 29 (*Acraca*), p. 15, pl. 5, f. 1-3 (1894); Aurivillius, Rhop. Aeth., p. 88 (1898). S. W. MADAGASCAR (Andranohinaly, Morondava).

♂. Expanse 30-40 mm. F.-w. transparent owing to reduction in width of scales which are very rarely bifid. Costa, apex, and hind margin dusted with blackish. A basal red flush to a little beyond middle of cell, not extending into area 2, but slanting outwards from origin of 2 nearly to hind angle. H.-w. red with a narrow brownish marginal border, the dark colour extending slightly along each nervule. Black spots, more or less confluent, as follows:—A discal series of eight, the first large, in area 7, the second much smaller, in 6, and the next three gradually increasing in size, the fifth being as large as the first. These five are parallel to the hind margin. The sixth much nearer base, the seventh and eighth nearer margin. Two small spots on end of cell on discocellulars. Basal spots, one in area 8, one in 9, two in cell, two in 1c, one in 1b, and 1a. Underside f.-w. devoid of scales except in basal area which is nearly as red as on upperside. H.-w. ground colour pink,

narrow marginal border of black spots and whitish spots arranged on and between nervules respectively. Within this border a series of seven red internervular spots, that in 1c more or less doubled. Black spots as on upperside, and three conspicuous red spots, one near base in area 7, and two in 1c. A few red scales at other points notably in cell near end. Thorax and abdomen black above and brownish below with lateral brownish yellow spots. Claws unequal.

♀. Expanse 40-46 mm. Resembles the ♂ but red colour may be replaced by tawny, h.-w. underside has the ground colour much whiter and the red submarginal spots duller and more elongate. The red colour would appear to vary considerably. Mabilie's figure, stated to be that of a ♀, is nearly as red as an average ♂, Grose-Smith's figure is much paler, whilst an example before me from the Tring collection is intermediate between these.

The male armature is of a very simple character. *A. lia* would appear to be a rare species, and I have seen but few examples. Owing to its small size and the peculiar pattern of the h.-w. underside it is not difficult to distinguish from its nearest allies.

20. *ACRAEA OBEIRA*. Pl. VII, f. 9. Pl. XVI, f. 21.

Acraea obeira, Hewitson, Proc. Zool. Soc., p. 65 (1863); Mabilie, Hist. Nat. Mad., 1, p. 95, pl. 9a, f. 7, pl. 10, f. 5, 6 (1885-7); Aurivillius, Rhop. Aeth., p. 88 (1898).

= *piva*, Guenée, Vinson Vog. Mad. Annexe, p. 34 (1864).

= *andromba*, Gr. Smith, Ann. Nat. Hist. (6), 7, p. 124 (1891); Smith & Kirby, Rhop. Exot., 21 (*Acraea*), p. 13, pl. 4, f. 6-8 (1892); Aurivillius, Rhop. Aeth., p. 88 (1898).

MADAGASCAR.

A. obeira burni, subsp.

Butler, Ann. Nat. Hist. (6), 18, p. 467 (1896); Proc. Zool. Soc., p. 841, pl. 50, f. 3 (1898); Aurivillius, Rhop. Aeth., p. 88 (1898).

NATAL.

A. obeira obeira.

♂. 50-56 mm. F.-w. almost transparent, the scales very slightly reduced in width and never resembling hairs. Costa, apex and hind margin dusted with blackish. A rusty yellow basal suffusion reaching a little beyond middle of cell, just beyond origin of nervure 2, and not quite to the hind angle. H.-w. with a basal suffusion of the same rusty yellow, its outer

limit in some cases nearly parallel to hind margin and extending a little beyond end of cell, in other cases almost reaching the margin at apex and anal angle, whitish on inner margin. Remainder of discal area transparent. A narrow dusky marginal border beset with internervular red spots. These vary in number from 3 or 4 to 7 and become less distinct towards the apex. That in area 1c may be doubled. Basal and discal black spots as follows. A discal row of eight, the first three (in 7, 6, and 5) lying parallel to margin, the fourth nearer to base, the fifth nearer to margin, and the sixth, seventh, and eighth nearer base and in a straight line which, if produced, would pass through tip of cell and apex. Two small spots, sometimes indistinct, on end of cell at origin of 6 and 5. Basal spots, two in cell close together, one in 7, one in 1c, 1b, and 1a, that in 1b more distally placed. One or two black spots against the thorax. These spots are often large and more or less confluent. A slight basal black suffusion (not always present). Underside f.-w. not scaled, h.-w. as on upperside but basal suffusion pale pinkish, creamy white along inner margin. Thorax black with yellowish lateral spots. Abdomen black above, paler beneath, with pale yellowish rings and lateral spots. Claws unequal.

The size of the h.-w. spots is very variable. In some cases they are small and well separated, in others large and confluent.

♀. Expanse 63 mm. The rusty yellow of the ♂ replaced by yellowish white. The h.-w. spots sometimes larger than in the ♂, the red marginal spots of the h.-w. ochreous and obsolescent.

The examples figured by Mabille (*l. c.*) Plate 10 appear to be ♀ ♀ and not ♂ ♂ as there indicated.

Mabille states (*l. c.*) that he has examined Guenée's type and that the *Acraea piva* of that author is synonymous with *A. obeira*. Further I cannot separate Grose-Smith's *A. andromba*. The distinguishing feature of this form is the possession of six rounded red marginal spots, instead of three or four elongate spots in *obeira*, but even a small series of the latter species shows these spots to be extremely variable in number, shape, and depth of colour.

A curious feature of *Acraea obeira* is the instability of structure in the origin of nervures 6 and 7 in the h.-w. These may arise independently, or from a common stalk at some distance from the cell. They may even be stalked in one wing and independent in the other in the same specimen.

In 1891 (Trans. Ent. Soc., p. 172) Trimen described

two ♀ *Acraeas* from Natal and Zululand and referred them to this species. Also in 1894 (Proc. Zool. Soc., p. 23) a similar ♀ from Manicaland. These examples have been subsequently found to be ♀♀ of *A. igola* Trim., so that true *obeira* would appear to be confined to Madagascar. Mabilie describes the species as rare, and occurring in the east and north of Madagascar, Grose-Smith's examples (*andromba*) were from the N.W. coast of that island. Examples in the Tring Museum are from Morondava, so that the species must be distributed practically over the whole island.

A. obeira burni, subsp.

♂. Expanse 38–50 mm. F.-w. semitransparent, scales being few in number and slightly reduced but never resembling hairs. Costa, apex, and hind margin dusted with brownish-black scales. A pale ochreous basal suffusion extending to end of cell, slightly into area 2, and thence diagonally to hind angle. A blackish longitudinal streak in cell, and a black powdering at end of cell on discocellulars. A black basal streak in 1b. Sometimes a suggestion of submarginal yellowish spots, especially in 1b, and submarginal blackish spots in 1a and 2. H.-w. pale ochreous. A narrow blackish hind marginal border bearing seven reddish ochreous internervular spots, that in 1c doubled. Discal and basal black spots as follows :—A discal row of eight, the first three in 7, 6, and 5 nearly parallel to margin, the fourth in 4 nearer base, the fifth in 3 nearer margin, and the sixth, seventh, and eighth in 2, 1c, and 1b nearer base and in a straight line which, if produced, would pass through tip of cell and apex. Two spots, coalescent at end of cell on discocellulars, one sub-basal in 7, two in cell close together, one in 1c, 1b, and 1a, that in 1b more distally placed. One or two spots against the thorax. These spots are smaller than in *obeira* and not confluent. A slight basal black suffusion (not always present). Thorax black with yellowish lateral spots. Abdomen black above, paler beneath, with pale yellowish rings and lateral spots. Underside. F.-w. not scaled, h.-w. as on upperside but paler.

♀. Expanse 55–65 mm. Much paler. H.-w. spots, especially those nearer, base smaller or obsolescent, hind marginal border paler and spots larger.

After the most careful consideration I cannot give more than subspecific rank to Butler's *Acraea burni*. The ground-colour of the wings and the size of the black spots is the

only distinction between it and *obeira*. Even the peculiarity of the irregular structure in relation to nervules 6 and 7 is equally noticeable in both forms, and the male armatures are also similar.

The subspecies *burni* appears to be not uncommon on the Tugela River, Natal, from whence all the examples in the Oxford and National collections have been received.

21. *ACRAEA MAHELA*. Pl. VII, f. 6. Pl. XVI, f. 3.

Acraea mahela, Boisduval, Faune Mad., p. 31, pl. 6, f. 1 (1833) ;

Mabille, Hist. Nat. Mad., Lep., 1, p. 90, pl. 11, f. 13 (1885-7) ; Aurivillius, Rhop. Aeth., p. 87 (1898).

= *A. madhela*, Staudinger, Exot. Schmett., 1, p. 83 (1885).

MADAGASCAR (Jahora, Andranohinaly, Menabe, Marovoai) ;
JUAN DE NOVA I. ; ? MOZAMBIQUE.

♂. Expanse about 56 mm. F.-w. Semitransparent owing to substitution of elongated bifid scales for the usual rounded form. A basal suffusion of pale or medium ochreous extending some distance beyond cell and a little beyond hind angle. A slight dusting of pale ochreous at the apex. Black spots as follows, one transverse spot in cell beyond middle, one irregular spot on discocellulars, a row of three in 4, 5, and 6, not quite half way between end of cell and apex, one small spot in 3 and 2 near the cell, and in 1b a somewhat larger spot usually rather nearer margin than base. Occasionally there is a second spot in 1b half way between the base and the origin of nervure 2. H.-w. moderately thickly scaled with ochreous and spotted with black as follows. Six coalescent spots on hind margin on ends of nervules beginning with 2. An irregular discal band of eight, the first four in 7, 6, 5, and 4 respectively, and lying parallel to margin, the fifth in 3 and nearer to base, the sixth in 2 close to origin of nervule 3, the seventh in 1c and on a level with the fifth, the eighth in 1b and on a level with the sixth ; one spot on end of cell at origin of nervule 5. Sometimes also a very small one at origin of 6. One spot near middle of cell and five basal spots, one in 1a, one in 1b more distally placed, one larger in 1c, one in cell, and one in area 7. These spots and also the lowest of the discal row are really on the under surface but are visible through the wing membrane. Underside resembles the upper. Thorax black, spotted above and below with ochreous. Abdomen black above for about half its length, the remainder and underside ochreous. Claws unequal.

♀. Resembles the ♂, sometimes rather larger and paler. Abdomen with less black and of a paler ochreous.

Acraca mahela is very closely allied to *A. neobule*, the position of the spots is precisely similar, though *mahela* lacks the spotted hind wing margin and basal black ringed white spots which characterise the former species. There is little constant difference in the male armatures of the two species. Mabilie describes it as somewhat rare, having a swift flight, and inhabiting the eastern slopes of Madagascar. Specimens in the Oxford collection were taken in S.W. Madagascar. There is an example in the general collection in the Berlin Museum labelled "Mozambique," but the occurrence of the species on the mainland seems doubtful.

22. *ACRAEA NEOBULE*. Pl. VII, f. 3. Pl. XV, f. 18.

Acraca neobule, Doubl., Hew., and Westw., Gen. Di. Lep., pl. 19, f. 3 (1848); Guérin, in Lefeb. Voy. Abyss., 6, p. 378 (1849); Reiche, in Ferret et Galinier, Voy. Abyss. Ent., p. 466, pl. 33, f. 3, 4 (1849); Trimen, Trans. Ent. Soc., p. 345 (1870); Trimen, S. Af. Butt., 1, p. 137 (1887); Butler, Proc. Zool. Soc., p. 66 (1888); Aurivillius, Rhop. Aeth., p. 89 (1898); Butler, Proc. Zool. Soc., p. 192 (1898); *l. c.* p. 401 (1898); Dixey, Proc. Zool. Soc., p. 11 (1900); Butler, Proc. Zool. Soc., p. 923 (1900); Neave, Novit. Zool., xi. p. 346 (1904); Aurivillius, Voeltzkow Reise. Lep., p. 315 (1909); Neave, Proc. Zool. Soc., p. 11 (1910).

= *matuapa*, Gr.-Smith, Ann. Nat. Hist. (6), 3, p. 127 (1889); Smith & Kirby, Rhop. Exot., 10 (*Acraca*), p. 6, pl. 2, f. 5, 6 (1889).

? = *mhondana*, Vuillot, Ann. E. Fr. 60 Bull., p. 115 (1891).

DAMARALAND; ANGOLA; CONGO (Kassai); N.E. RHODESIA; BAROTSELAND; NATAL; TRANSVAAL; CAPE COLONY; PORTUGUESE E. AFRICA; GERMAN E. AFRICA; BRITISH E. AFRICA; SUDAN; SOMALILAND; ABYSSINIA; GRAND COMORO I.; PEMBA I.

f. *sokotrana*.

Rebel, Denksch. Akad. Wiss. Wien., 71, 2, p. 28 (1907).

= *neobule*, Butler, Proc. Zool. Soc., p. 177, pl. 18, f. 5 (1881); Dixey, Proc. Zool. Soc., p. 374 (1898); Grant, Nat. Hist. Sokotra, p. 304 (1903); Neave, Proc. Zool. Soc., p. 11 (1910) (part).

SOKOTRA I.; N.E. RHODESIA (Luangwa R).

A. neobule seïs, subsp.

Feisthamel (*A. seïs*), Ann. Ent. Fr., p. 247 (1850); Aurivillius (*neobule*, var. *seïs*), Rhop. Aeth., p. 89 (1898).

= *calyce*, Godman & Salvin, Proc. Zool. Soc., p. 221, pl. 17, f. 1, 2 (1884).

SENEGAL ; S. LEONE ; LIBERIA ; TOGO ; DAHOMEY ; LAGOS ;
ASHANTI ; GOLD COAST ; NIGERIA ; ? OLD CALABAR ; FRENCH
SUDAN (Bammako to Wagadugu).

A. neobule arabica, subsp.

= *A. arabica*, Rebel, Denksch. Akad. Wiss. Wien., 71, 2, p. 28,
p. 29, f. 1, 2, p. 30, f. 3, 4, 5, pl. 1, f. 1, 2 (1907).*

S. ARABIA.

A. neobule neobule.

♂. Expanse 50-65 mm. F.-w. semitransparent, scales being reduced in number and width, and near margins becoming slender and bifid. Costa and apex more or less dusted with black. A red basal suffusion, pale or bright, extending a little beyond cell, slightly into area 3, and thence in a nearly straight line to hind margin just beyond the angle. Often a slight ochreous suffusion at apex. Black spots more or less distinct, three beyond cell in 6, 5, and 4, one at end of cell on discocellulars, one in cell rather beyond middle, one small in 3 near to cell, one larger in 2 just below median, two in 1b, one discal and one subbasal, and a linear basal spot in same area. H.-w. pale to bright red. A narrow hind marginal black border bearing seven small spots of the ground-colour (the last in 1c doubled) which are more completely enclosed than in *horta*, and may even be obsolete. Basal and discal black spots varying greatly in size and arranged as follows :—A discal row of eight, the first four in 7, 6, 5, and 4 approximately parallel to margin and decreasing in size, the fifth slightly further from margin in 3, the sixth much further from margin in 2, the seventh in 1c and in line with the fifth, the eighth in 1b in line with the sixth. A minute spot just outside cell at origin of 6, a larger one on lower discocellular at origin of 4, a subbasal spot in 7, one median and one subbasal in cell, the rest confused on upperside in a basal suffusion. Near inner margin the spots may be absent on upperside and only showing through from beneath. Underside f.-w. scaled only at costa. H.-w. as upperside but powdered with whitish scales. Marginal border edged inwardly with reddish and spotted with white. Basal aggregation of spots enclosing three or four whitish marks. Thorax black with whitish lateral spots. Base of abdomen black with lateral yellow spots, remainder orange and rather paler beneath. Claws unequal.

♀. Expanse 50-70 mm. Resembles ♂ but red replaced by dull ochreous. Spots on h.-w. border usually larger.

* A previous reference is given in this publication to the Sitzberichtigungen Akad. Wiss. Wien., p. 359 (1899). There is no trace of such reference at the page and date given.

A. neobule, f. *sokotrana*.

Specimens of *A. neobule* from Sokotra have been described by Butler and by Dixey (*l. c.*). These differ from the normal form principally in the increased amount of black scaling at apex, little or no ochreous scaling in the same region, the ground-colour a richer red, the black spots larger, and the dark h.-w. border blacker and smoother in outline, its spots being less distinct. This Sokotra form has been named *neobule*, subspecies *sokotrana* by Prof. Rebel (*l. c.*) and in the absence of similar examples from other regions such a distinction would be quite justified. Examples however, taken by Neave in N.E. Rhodesia, are not distinguishable from these Sokotra forms. It is one of those cases in which a form or variety in one locality becomes the dominant race in another.

A. neobule seis, subsp.

Differs from the typical *neobule* in the following points. Average size generally smaller, f.-w. much less transparent, apical black more pronounced, a submarginal row of internervular orange ochreous spots joining the much-extended reddish basal suffusion. H.-w. with marginal border much indented inwardly. The ♀ much nearer the ♂ in colour, often with a considerable black powdering along median and nervure 1 in f.-w.

A. neobule arabica, subsp.

Wings with the exception of transparent apical part of f.-w. uniform orange ochreous. Spots as in *neobule* but smaller. H.-w. marginal border formed of shallow black arches on a black marginal line enclosing internervular spots of ground-colour.

The h.-w. beneath is powdered with chalky white scales and the black spots at base are not confluent and therefore do not enclose white spots as in the typical form.

The ♀ is slightly larger and duller in colour, and the f.-w. transparent apical patch rather broader.

This form is represented by a ♂ and ♀ from Wadi Bagrên near Makalla and by four ♂♂ from Wadi Dhawrûten near Râs Fartak taken in March 1899. Prof. Rebel's description is accompanied by five excellent text figures showing the structure of the genitalia. These leave no doubt as to the specific identity of the form with *neobule*.

Acraea neobule is somewhat variable though none of the variations show sufficient constancy to enable the forms to be separated into races other than those above indicated.

The species is recorded (Trans. Ent. Soc., p. 330, 1902) as having been untouched after death by ants which had eaten every other specimen in a box except *A. admatha*. Mr. Bennett's note (Dixey, Proc. Zool. Soc., p. 374, 1898) describes the species in Sokotra as "mostly seen in the hills, at an elevation of about 2,000 ft. Not hard to get, the flight being slow and bold." Mr. Crawshay describes it at Nairobi (Butler, Proc. Zool. Soc., p. 923, 1900) as "common and fond of perching on a violet-coloured 'Devil's Bit'-like flower which grows on the plains."

The male armature shows a certain amount of individual variation, the length of claspers and uncus being somewhat inconstant. In the subspecies *seis* there is a tendency for the claspers to be shorter. *Neobule* is undoubtedly the mainland representative of *mahela*, from which it is rather doubtfully separable. Curiously enough the ♂ armature of the latter approaches more nearly the usually shorter structure shown in *neobule seis*.

23. *ACRAEA ZAMBESINA*.

Acraea zambesina, Aurivillius, Arkiv. för Zool., 5, No. 5, p. 123 (1908); Mendes, Brotéria. Ser. Zool., ix, fas. iii, p. 160, pl. 7, f. 1 (1910).

PORTUGUESE E. AFRICA (Zumbo on Zambesi R.).

I have not had an opportunity of examining this specimen and can therefore only give Prof. Aurivillius' description of it.

♀. Expanse 56 mm. Allied to *A. neobule*, Doubl., but having the f.-w. fully clothed with scales and so devoid of transparent areas; it also differs from *neobule* in that the white centred basal spot of area 1c of the h.-w. underside is much smaller than in *neobule*, and scarcely larger than the basal spot in 1a.

F.-w. above dull reddish yellow with narrow border (only 1 m. broad), triangularly marked at the ends of nervules, the nervules near margin more or less black. F.-w. with the following black spots. One in middle of cell, two coalescent at end of cell, and five discal spots (in 1b, 3, 4, 5, and 6). The basal spot in 1b and the discal in 2 wanting in the present example. Spots arranged quite as in *neobule*, but larger, and somewhat as in the form *sokotrana*, Rebel. On the underside the f.-w. is coloured and marked quite as above except that it is more or less powdered with whitish yellow scales at the margin. The h.-w. is almost exactly like that of *neobule* but

the marginal border is a little broader and the pale spots more distinct. Beneath, the h.-w. has a still wider border and very large pale marginal spots. Discal spots arranged as in *neobule*. The black, white-centred, basal spots in 1a, 1c, and cell are smaller, (especially in 1c) and almost of equal size.

One ♀ from Zumbo on the Zambesi R. in Portuguese E Africa. Mus. Colleg. St. Fiel.

A. neobule is a variable species, and the present example differing from it but slightly, will probably prove to be merely a local form of the same. The figure (*l.c.*) is a rather poor photograph which however shows the specimen to differ from both *neobule* and *seis* in having the f.-w. fully scaled, and in the h.-w. a broader black border and fewer spots.

24. *ACRAEA HORTA*. Pl. VII, f. 1. Pl. XV, f. 16.

Acraea horta, Linnaeus, (*Pap.*) Mus. Lud. Ulr., p. 234 (1764); Syst. Nat., ed. 12, p. 755 (1767); Fabricius, Syst. Ent., p. 459 (1775); Sulzer, Ges. Ins., p. 143, pl. 15, f. 1 (1776); Cramer, Pap. Exot., 4, p. 18, pl. 298, f. F, G. (1780); Drury, Ill. Exot. Ins., 3, p. 37, pl. 28, f. 1, 2 (1782); Wulfen, Ins. Cap., p. 31 (1786); Herbst, Naturs. Schmett 5, p. 22, pl. 83, f. 1, 2 (1792); Fabricius, in Illiger's Magazine (*Acraea*), 6, p. 284 (1807); Godart, Enc. Méth., 9, p. 231 (1819); Doubl., Hew., and Westw., Gen. Di. Lep., p. 140 (1848); Trimen, Rhop. Af. Austr., p. 93 (1862); Trimen, S. Af. Butt. (metam.), 1, p. 134-6 (1887); Staudinger Exot. Schmett, 1, p. 82, pl. 33 (1885); Brunner v. Wattenwyl, Farbenpr. der Ins., p. 5, pl. 4, f. 43 (1897); Aurivillius, Rhop. Aeth., p. 89 (1898); Butler, Proc. Zool. Soc., p. 192 (1908); Marshall, Trans. Ent. Soc., p. 337 (1902).

CAPE COLONY; NATAL; ZULULAND; TRANSVAAL; PONDO-LAND.

♂. Expanse about 50 mm. F.-w. semitransparent, the discal scales being modified into a narrow bifid form. Some hairs present and the membrane of the wing speckled with brown at points of attachment of scales. Costa and hind margin slightly dusted with blackish, frequently a suggestion of red internervular spots at apex. Base black. A bright red (brick red in old specimens) basal suffusion extending a little beyond end of cell, very slightly into area 3, half way across 2, and almost completely filling 1a, and 1b. A transverse black spot at end of cell on discocellulars. A spot in cell beyond the middle, one

immediately below median in area 2, and two in 1b, the first immediately below the median, the second much larger near the middle. These may be fused into one large longitudinal mark. All these spots except that on the end of cell may be very faint or in some examples absent altogether. The h.-w. bright red (duller in old specimens) with a narrow border of blackish not quite enclosing seven internervular spots of the ground-colour, that in 1c being doubled. Black discal and basal spots as follows:—A discal band of eight, the first rather larger than the next three, lying parallel to the hind margin in 7, 6, 5, 4, the fifth larger and nearer cell in area 3, the sixth still nearer base in 2, the seventh in 1c in line with the fifth, the eighth in 1b and in line with the sixth. In addition to the discal spots, two at end of cell on discocellulars, two in cell, one subbasal spot in 7, a large subbasal spot in 1c, a small one in 1b, and another in 1a. Internervular spaces at extreme base, black, usually coalescing with subbasal spots. The spots in 1a and 1b are also frequently confluent. Underside f.-w. devoid of scales, h.-w. dull ochreous. A narrow black margin set with ochreous spots, followed by a narrow red submarginal border. Some red also in areas 9, 8, 7, 1c, 1b, and 1a. Spots as on upperside, those at base usually confluent and enclosing spots of the ochreous ground colour. Thorax black with a few indistinct pale spots. Abdomen black above, orange ochreous beneath, and bearing small ochreous lateral spots. Claws unequal.

♀. Expanse about 60 mm. Resembles ♂ but has the red replaced by dull ochreous and the f.-w. spots are more frequently absent.

A description of the larva and pupa will be found in Trimen's *S. Af. Butt.*, 1, p. 135–6, from which the following is abstracted.

Larva.—About 32 mm. long; with strong branched black spines. Dull brownish ochreous, closely striped with black transverse streaks. A pale ochreous dorsal line. A broad ochreous lateral band not crossed by the black streaks. Legs bright shining yellow; head shining black. Two spines on second segment, four on the last, and six on each of the other segments. Feeds on *Kigellaria africana* and on various passion-flowers.

Pupa.—About 20 mm. long. Head blunt, hardly bifid; lateral angles at base of wing covers prominent and acute. Back

of thorax rather blunt and rounded. Pale creamy ochreous. Wing covers streaked with black along position of nervures. Two dorsal, one ventral and two lateral lines of black ochre centred spots.

"The silk to which the tail is attached often covers an area of an inch in diameter."

Trimen states that the species is extremely common in and about Cape Town. It flies slowly, and the larvae frequently do much damage to passion flowers. Fowls will not eat the larvae, which have a strong and disagreeable odour more perceptible than that of the pupa or even of the butterfly. Its distastefulness does not however preserve it from the attacks of parasites, as Marshall records (Trans. Ent. Soc., p. 337, 1902) that five out of eight pupae were killed by a dipterous parasite. The male armature, though almost indistinguishable from that of *insignis*, to which species it bears, in pattern, but little resemblance, is of very different structure from that of *A. neobule*, although in other respects *horta* and *neobule* bear an extremely close resemblance.

A. horta appears to be an essentially S. African species. Trimen gives S. Leone as a locality on the authority of the British Museum, but the specimens so labelled must have been removed as the twenty-six examples in the present series bear the labels Cape Colony, Natal, Zululand, and Transvaal.

Trimen (*l.c.*) thus describes the pairing of this species:

"The ♀ rested on the ground with expanded wings, and the ♂ rested on the ♀ with his wings also flatly extended. In this position (which was maintained) the heads of the two were held in the same direction, and the extremity of the ♂ abdomen was twisted sideways as in the union of the saltatorial Orthoptera."

It is interesting to note in this connection that the orifice of the *bursa copulatrix* is at one side of the chitinous plate and not central as in most species.

25. *ACRAEA ADMATHA*. Pl. VII, f. 5.

Acraea admatha, Hewitson, Exot. Butt. (*Acraea*), pl. 3, f. 16, 17 (1865); Trimen, Trans. Ent. Soc., p. 171 (1891); Aurivillius Rhop. Aeth., p. 88 (1898); Gordon, Trans. Ent. Soc., p. 330 (1902).

S. LEONE; ASHANTI; GOLD COAST; OLD CALABAR;

NIGERIA ; CAMEROON ; GABOON ; CONGO REGION (Bena Bendi Zongo, Mokoange) ; NATAL ; ZULULAND ; BRITISH E. AFRICA (Witu).

f. leucographa.

Ribbe (*A. leucographa*), Iris., 2, p. 181, pl. 4, f. 1 (1889) ; Snellen, Tijdschr. v. Ent., 38, p. 13 (1895) ; Aurivillius, Rhop. Aeth., p. 88 (1898).

S. LEONE ; CAMEROON (Bitjé) ; NYAM NYAM COUNTRY ; CONGO (Sassa) ; UGANDA (Unyoro, Nandi, Entebbe, Semiliki R., Kitala) ; BRITISH E. AFRICA (N. Kavirondo) ; GERMAN E. AFRICA (Ukerewe I.) ; ABYSSINIA (Scheko).

A. admatha admatha.

♂. Expanse 55-65 mm. F.-w. semitransparent, thinly scaled with scales of normal size standing partially erect, narrow bifid scales and fine hairs appear at hind margin. A rosy red basal flush (brick red in old specimens) extending nearly to end of cell at subcostal and median, but more basal in the middle, passing slightly beyond origin of 2 and just reaching the hind angle. Base, costa and apex dusted with black, and a small linear basal spot below median. A faint black spot in middle of cell and sometimes a blackish dusting at end of cell on discocellulars. A little beyond end of cell two faint black spots in 4 and 5, and sometimes a third nearer to cell in 3. Just below median in 2 a faint spot, and one in 1b rather nearer margin. These spots are very variable in intensity.

H.-w. rosy red (brick red in old examples) dusted with black at base, whitish in area 1a, and having a moderately broad black marginal border bearing six rounded red internervular spots. Black discal and basal spots as follows :—A discal series of eight, the first (large) in area 7 near the middle, the second in 6, rather nearer base (this spot is often wanting), third and fourth in 5 and 4 and lying in a straight line with the first, the fifth in 3 close to cell, the sixth, seventh, and eighth in 2, 1c, and 1b, large, nearer to base, and almost in a straight line (some of the discal spots are sometimes small or wanting), in addition to these two small spots at end of cell, one spot in 9, one in 7, two in cell, two in 1c, one in 1b (close to eighth of discal row), and two in 1a. Underside f.-w. almost devoid of scales but dusted with yellow near base, h.-w. pink with black border as on upperside, bearing six red spots outwardly edged with pinkish white. Black spots as on upperside but much more distinct. Thorax black, spotted above and below with yellowish white. Abdomen basal half black above with lateral orange spots, remainder orange, underside yellowish white. Claws unequal.

♀. Expanse 60–75 mm. F.-w. as in ♂ but red replaced by rusty yellow varying to brownish cream colour, and spots faint or absent. H.-w. colour modified in the same way. Spots often less distinct than in the ♂. Underside dusky white, marginal spots yellow, edged with whitish.

A. admatha f. *leucographa*.

This form differs from the above in having a white patch at anal angle of h.-w. This patch extends from the discal spots in 1b, 1c, and 2 to the black border, with sometimes a few white scales in area 3. On the upperside of h.-w. the first three or four discal spots may be faint or absent. The ♀ is a little larger, less brightly coloured, and has the white on h.-w. more suffused. I have before me a small series of examples from Entebbe showing a beautiful gradation in the extent of the white, one specimen having only a faint white scaling near the anal angle.

Though *A. admatha* is a somewhat variable species having a wide range, I have been unable to assign any of the variations to definite localities. Trimen states (*l. c.*) that his southern examples differ from typical W. African specimens in having less rounded spots in the h.-w., and also that the subbasal spot in the cell is wanting, also that in the f.-w. the red area is more extended and the discal spots wanting in the ♂ but present in the ♀. A pair before me from Zululand, show a tendency to confluence in the h.-w. spots especially in the ♂, but the spots in h.-w. are quite as rounded as in other examples, the second cell spot is not absent, the f.-w. red is of the usual extent and the f.-w. discal spots are present in the ♂ and wanting in the ♀. We must conclude therefore that these features are inconstant. The form *leucographa* is characteristic of the central area of the species' range. It has been taken in the Nyam Nyam country north of the Ubangi River, at Sassa in the extreme North of the Congo State, and at Kitala in Uganda. In Proc. Zool. Soc., p. 977, 1899, Butler mentions it as having been taken in the Nandi District by Captain Hobart, who found it quite common there. Examples occur sporadically in other parts of the species' range. The typical form with slight variation occurs from Ashanti to the Congo State, and southwards to Natal.

A. admatha is recorded by C. J. M. Gordon in Old Calabar (*l. c.*) as being untouched after death by ants which had eaten all the other specimens in a box except *A. neobule*.

The male armature is fairly distinctive having a characteristic dentate edge to the claspers.

26. *ACRAEA INSIGNIS*. Pl. VII, f. 2. Pl. XV, f. 17. Pl. XVI, f. 20. *Acrae insignis*, Distant, Proc. Zool. Soc., p. 184, pl. 19, f. 6 (1880); Godman, Proc. Zool. Soc., p. 538 (1885); Butler, Proc. Zool. Soc., p. 66 (1888); Rogenhofer, Ann. Mus. Wien., 6, p. 457 (1891); Aurivillius, Rhop. Aeth., p. 89 (1898); Sjöstedt's Expedition, p. 3 (1910); Grünberg, Sitzb. Ges. Nat. Fr., p. 148 (1910).

= *balbina*, Oberthür, Etud. d'Ent., 12, p. 6, pl. 3, f. 8 (1888); Butler, Proc. Zool. Soc., p. 923 (1900).

= *buxtoni*, Hewitson, Ent. Mo. Mag., xiv, p. 155 (*nec* Butl.) (1877).

NYASSALAND; GERMAN E. AFRICA (Bukoba, L. Kivu); BRITISH E. AFRICA (Kikuyu, Kangasi); UGANDA (Entebbe).

f. *siginna*, Suffert, Iris., p. 19 (1904); Aurivillius, Sjöstedt's Expedition, p. 3 (1910).

GERMAN E. AFRICA (generally, and especially Kilimandjaro); BRITISH E. AFRICA (Tiriki Hills, Entebbe).

A. insignis insignis.

♂. Expanse 50–60 mm. F.-w. semitransparent. The scales in apical area being of normal size but few in number and set partially upright. Near margin numerous narrow forked scales. Base slightly blackish; costa from end of cell to apex, and sometimes apical portion of hind margin, often dusted with black scales. A brick red basal suffusion extending a little beyond end of cell and to hind angle. A black transverse spot on end of cell, and a black linear basal spot below median. H.-w. brick red with a narrow black marginal border the inner edge of which may be smooth or undulating. The base of wing has a black suffusion occupying lower half of cell, base of 2, 1c, and 1b, followed by a large oblique spot lying on the discocellulars. Underside. F.-w. almost devoid of scales. H.-w. as on upperside but with the discal area pink, separated from the marginal black by a narrow red submarginal band. Often one or two white spots near base. Thorax black with lateral and ventral yellowish spots. Abdomen black above, orange laterally and towards extremity and paler beneath. Claws unequal.

♀. Resembles ♂ but the red is replaced by a colour varying from slightly paler than that of the ♂, to a dull pale brown.

TRANS. ENT. SOC. LOND. 1912.—PART I. (JULY) G

A. insignis f. *siginna*.

Differs from the typical form in having all the h.-w. basal black coalescent, forming a large black patch extending beyond cell with an irregular distal outline from costa to inner margin.

Aurivillius records the *siginna* form as occurring almost to the exclusion of the type, at great elevations (2,000 to 3,000 metres) on Mts. Meru and Kilimandjaro. Intermediates however appear to occur everywhere. When Distant described and figured this species, he pointed out that it was the same as that described by Hewitson as *A. buxtoni*. That name had however been previously used by Butler, and as Godman points out, Hewitson must have suppressed the species as it does not appear in Kirby's catalogue of his collection, its place being taken by four undetermined forms from Zanzibar. These are the same as the species described and figured by Distant. Butler records *A. insignis* as taken by Mr. R. Crawshay at Roromo, Kikuyu Forest in February 1900, that collector remarking that the species frequents the primaeval forest and that it is capable of resisting the fumes of strong cyanide for half-an-hour. The species is very nearly allied to *A. horta*, the ♂ armatures being with difficulty distinguishable. That of *insignis* is of a rather more slender construction.

27. *ACRAEA CAMAENA*. Pl. VII, f. 4.

Acraea camaena, Drury, (*Pap.*) Ill. Exot. Ins., 2, p. 12, pl. 7, f. 2 (1773); Fabricius, Syst. Ent., p. 464 (1775) (?); Herbst, Naturf. Schmett., 5, p. 9, pl. 81, f. 3 (1792); Godart (*Acraea*), Enc. Méth., 9, p. 234 (1819); Aurivillius, Rhop. Aeth. p. 89 (1898); Lathy, Trans. Ent. Soc., p. 185 (1903).

= *murcia*, Fabricius, (*Pap.*) Spec. Ins., 2, p. 33 (1781).

S. LEONE; GOLD COAST; LIBERIA; ASHANTI; LAGOS; NIGERIA; FERNANDO Po.

(There is apparently some confusion under *camaena* in the 1775 edition of Fabricius. *Camaena* is stated to have red on h.-w., and to be allied to *zetes*. Then follows a fuller description, which agrees with Drury's figure of *camaena*. In the Species Insectorum (Vol. II, p. 32) *camaena* is again described with red on h.-w., and on p. 33, "*Papilio murcia*" is described, the account and the type agreeing with Drury's figure of *camaena*.)

♂. Expanse 55–65 mm. F.-w. smoky brown, partially translucent, one black spot at end of cell on discocellulars. H.-w.

same colour as f.-w. A blackish marginal border the inner edge of which is deeply indented. On this margin seven internervular spots of dull ochreous, that in 1c being doubled. A submarginal band of dull ochreous, narrow or obsolete at apex and widening out so as to extend over the whole of the inner margin. Black discal and basal spots as follows :—A discal row of eight, the first four parallel to hind margin, and decreasing in size from area 7 to 4, the fifth in area 3 close to cell, the sixth larger near base of area 2, the seventh in 1c and in line with the fifth, the eighth in 1b, in line with the sixth, one small and one large spot on discocellulars. A subbasal spot in 7, near the first of discal row ; two spots in cell, and a basal aggregation of confluent black spots.

Underside, f.-w. almost devoid of scales, h.-w. as on upperside but pale submarginal band more extensive, occupying nearly the whole discal area. Black hind marginal border bears white internervular spots, and the basal black encloses four subtriangular white spots. Thorax black with lateral and ventral yellowish white spots. Abdomen black above, yellowish beneath, with lateral yellowish white spots increasing in size towards extremity. Claws unequal.

♀. Expanse about 65 mm. Resembles ♂ but paler ; the h.-w. submarginal band reaches costa, underside uniformly dull ochreous with spots and markings as in ♂.

This curious species would appear to be somewhat rare. It is closely allied to *A. neobule*, but is easily recognised by its sombre pattern and the dull brown unicolorous f.-w. relieved only by the blackish spot at end of cell.

The male armature is distinguished from those of its nearest allies by the slightly different structure of the claspers.

GROUP IV.

28. ACRAEA ZETES. Pl. VI, f. 5 (larva).

Acraea zetes, Linnaeus, (*Pap.*) Syst. Nat., 10, p. 487 (1758) ; Mus. Lud. Ulr., p. 270 (1764) ; Clerck, Icones. Ins., 2, pl. 43, f. 1 (1764) ; Karsch (*Acraea*), Berl. Ent. Zeit., 38, p. 195, 198 (1893) ; Aurivillius (metam.), Ent. Tidschr., 14, p. 275, pl. 4, f. 4, 4b (1893) ; Rhop. Aeth., p. 90 (1898) ; Lathy, Trans. Ent. Soc., p. 185 (1903) ; Eltringham, Af. Mim. Butt., p. 66 (1910) ; Grünberg, Sitzb. Ges. Nat. Fr., p. 148 (1910).

f. *menippe*, Drury, (*Pap.*) Ill. Exot. Ins., 3, pl. 13, f. 3, 4 (1782) ; Stoll, Cramer Suppl., p. 131, pl. 28, f. 1, 1a (1790) ; Herbst,

- Naturs. Schmett, 5, p. 11, pl. 81, f. 4, 5 (1792); Butler (*A. egina*), Proc. Zool. Soc., p. 46 (1902).
 = *mycenaea*, Hübner, Verz., p. 27 (1816).
 = *zethea*, Godart, Enc. Méth., 9, p. 236 (1819).
 = *zethes*, Staudinger, Exot. Schmett, 1, p. 83 (1885).
 S. LEONE; ASHANTI; TOGO; CAMEROON; GABOON, NIGERIA; CONGO (Kassai to Albert Nyanza); BAROTSELAND; UGANDA (Entebbe, Kangasi, Unyoro, Sesse I.).
f. jalema, Godart, Enc. Méth., 9, p. 234 (1819); Aurivillius, Ann. Mus. Genov., p. 16 (1910).
 S. THOMÉ; NIGERIA; GABOON; UGANDA (Unyoro, Entebbe, Pt. Alice, Nandi); RHODESIA.
A. zetes acara, subsp. Pl. VIII, f. 2.
 Hewitson (*A. acara*), Exot. Butt., pl. 3, f. 19, 20 (1865); Trimen (*zetes*), Rhop. Af. Austr., p. 99 (1862); Trans. Linn. Soc., p. 517, pl. 42, f. 8, 9 (1869); S. Af. Butt., 1, p. 160, pl. 1, f. 1, 1a (metam.), (1887); Monteiro, Del. Bay, p. 201 (1892); Aurivillius, Rhop. Aeth., p. 91 (1898); Marshall, Trans. Ent. Soc., p. 504 (1902); Rogers, Trans. Ent. Soc., p. 525 (1908); Aurivillius, Sjöstedt's Expedition, p. 3 (1910); Eltringham, Af. Mim. Butt., p. 66, pl. 6 (1910).
f. mhondana, Suffert, Iris., p. 20 (1904).
 NATAL; DELAGOA BAY; TRANSVAAL; RHODESIA; NYASSALAND; GERMAN E. AFRICA; PEMBA I.; BRITISH E. AFRICA; UGANDA; WHITE NILE.
f. caffra, Felder, Reise Novara. Lep., p. 369, pl. 46, f. 10, 11 (1865); Eltringham (*acara*), Af. Mim. Butt., pl. 6, f. 3 (1910).
 = *tescea*, Suffert, Iris., p. 20 (1904).
 BAROTSELAND; TRANSVAAL; NATAL (and occasionally in other *acara* localities).
A. zetes barberi, subsp.
 Trimen (*A. barberi*), Trans. Ent. Soc., p. 433 (1881); S. Af. Butt., 1, p. 162, pl. 3, f. 1, 1a (1887).
 ab. *trimeni*, Aurivillius, Rhop. Aeth., p. 91 (1898).
 TRANSVAAL; W. GRIQUALAND.
A. zetes sidamona, subsp.
 Rothschild & Jordan, Novit. Zool., 12, p. 179 (1905).
 ABYSSINIA (Sidama).
A. zetes, f. menippe.
 ♂. Expanse 70–80 mm. F.-w. brownish black, darker at base, costa, apex, and hind margin. A more or less distinct submarginal row of reddish orange spots, very small or obsolete

at apex and increasing in size towards hind angle. Black spots (obscured by ground-colour) as follows. In cell one small spot at base (usually almost lost in basal suffusion), a larger subbasal spot, a still larger transverse spot between the latter and end of cell, and a transverse spot on the discocellulars. A transverse discal band of large confluent spots from costa almost to nervule 3, the area between this and apical black distinctly paler and in many cases white or yellowish. In area 2 a large spot below origin of nervule 3. Below this, in area 1b but nearer margin, a large reniform spot. Near base of same area and close to median, a small spot. Areas 1a, 1b, and 2 usually with a slight central red suffusion.

H.-w. vermilion red. A heavy black basal suffusion reaching nearly to end of cell, and a black marginal border about 3 mm. wide, (its inner edge not very sharply defined,) and bearing seven small internervular spots of the ground-colour. Black spots as on underside, those nearer base being lost in the basal suffusion.

Underside. F.-w. Basal and discal portion dull pink. Costa dull ochreous, black at base, and with a minute black subbasal spot. A slight black suffusion at base of area 1a, and 1b. Other spots as on upperside. Apical and hind marginal black largely displaced by orange ochreous internervular spots which are larger and more distinct than on upperside. H.-w. dull creamy ochreous, the black marginal border more sharply defined, bearing seven subtriangular spots of the ground-colour (that in 1c doubled) and bordered on its inner edge by seven corresponding red spots. Nine discal black spots those in 7, 6, 5, 4, and 3 roughly parallel to margin, one at origin of 5, one in 2 between 2 and median, one in 1c, rather nearer margin, and one in 1b, on a level with that in 2. A small spot in 8 above precostal. A black basal patch of confluent spots bordered outwardly with rose pink and enclosing six pale ochreous markings, one in 7, two in cell, and one in 1c, 1b, and 1a respectively. Area 9 and basal part of 8 rose pink.

Head black with a white spot between the eyes. Thorax black with whitish lateral spots more numerous beneath. Basal half of abdomen black, remainder deep orange, with a terminal fringe of black hairs. Claws unequal.

♀. Expanse 80-95 mm. F.-w. varying from dull reddish to brownish grey. Spots as in ♂ but much less distinct, and apical and hind marginal black paler and more suffused. An oblique subapical white bar from near costa to nervule 4. H.-w. dull reddish brown, with blackish marginal border bearing spots of

ground-colour larger than in male. Discal spots as in male, but basal black suffusion wanting. Underside rather sparsely scaled but otherwise as in male though paler. Abdomen brown, paler beneath.

I have described the *menippe* form at length because it is much the commonest typically western form. True *zetes* agreeing with Clerck's original figure has the f.-w. all brown black without submarginal spots and with just a trace of whitish subapical spots. The paler areas of underside are almost white.

A. zetes f. *jalema*.

This form is intermediate in pattern between *zetes* and *acara*. It has the red f.-w. of the latter but much suffused with black. The apex is usually also blackish, and the white spots just beyond the discal black are still present.

A. zetes acara, subsp.

♂. Expanse 80–85 mm. Wings bright red with black spots as in *zetes*. F.-w. has the apex only narrowly black. The subapical area is deep orange, and the hind marginal border bears large spots of the same colour, leaving the black only as heavy internervular arches gradually decreasing towards apex. H.-w. marginal border 4 mm. wide, the internervular spots very faintly visible. Basal black extending barely half the length of cell. Discal area frequently suffused with white (= *caffra* and *tescea*).

Underside, f.-w. dull pink, black spots as in *zetes*. Subapical area pinkish white. Area 6 with a suffused orange streak, beneath which is a marginal row of well-marked internervular orange spots bordered inwardly with black, and interstitially with bluish grey. H.-w. almost white. The spots on marginal and basal area are white. Fringes of both wings tipped with white between the nervules. Thorax and abdomen as in *zetes*.

♀. Expanse 80–90 mm. Wings pale pinkish brown, spotted as in male. F.-w. Subapical area pale dull ochreous. Underside f.-w. from base to about middle of wing very sparsely scaled. Subapical area creamy white with internervular orange markings. H.-w. white with marginal black bearing white spots and edged inwardly with orange spots. Basal black having white spots and edged outwardly with pink.

f. *mhondana*.

In this form the f.-w. apical black joins the end of cell, a common variation which may be observed in almost any series.

f. caffra.

This form is merely *acara* with a white discal suffusion in the h.-w.

f. barberi.

This form was described by Trimen as a separate species but it cannot be separated from *acara*. In the ♂ the f.-w. apical yellow is less distinct from the ground-colour and the black spots are smaller. The ♀ has the f.-w. semitransparent and the basal black is almost obsolete. The h.-w. hind marginal black is almost absent.

In the example named *ab. trimeni* by Aurivillius the apical yellow is more pronounced, and the f.-w. hind marginal black is almost absent. Aurivillius includes under this an example from Rehoboth (German W. Africa) which is now in the Staudinger collection. If this is really *barberi* then the *hypoleuca* of Trimen must also be a form of *zetes* which indeed is highly probable, extremely different in appearance though it is. I have in fact only kept *hypoleuca* separate from *zetes* because it is so far a unique example and bears no locality. The example labelled *barberi* in the Staudinger collection differs very little from it. (See remarks under *A. hypoleuca*.)

A. zetes sidamona.

The Abyssinian subspecies is described by Messrs. Rothschild and Jordan (*l. c.*) as standing about half way between W. African *zetes* and E. African *zetes acara*. In f.-w. on basal side of cellular and postcellular spot is a red mark. The middle portion of the discal black band nearly touches the discocellular spot. Six isolated reddish orange submarginal spots larger than in *z. zetes*. H.-w. black basal area rather more extended than in *z. acara*. Underside with more red than in the other geographical forms, h.-w. marked with white as in *acara*; yellow submarginal spots all separated from disc by a broad black border except that in area 6 which is long.

The larva and pupa of *zetes* are described by Aurivillius (*l. c.*).

The former is yellowish red, with a shining red head and a dark transverse band in the middle of each segment. The spines are black and arise from black shining processes. The two dorsal spines of the first segment are somewhat elongated, the remainder bent slightly backwards.

My figure is from a Lagos example which agrees generally with Aurivillius' description.

The pupa is yellowish with black nervure lines, black markings on the head, a black band divided by two pale lines on thorax, and fine black lines ornamented with pale spots on the abdomen.

The larva and pupa of *z. acara* are described by Trimen (*l. c.*).

The former is ochreous yellow, each segment with a broad purplish red transverse band. Black spines long and branched arising from tubercles on the dark bands. The first two dorsal spines longer than the rest, erect. Head ochreous yellow, legs and prolegs purplish red. "Feeds on *Passiflora*." Pupa, pinkish white, with black neuration and limb markings. Lines of rose pink spots in rows of wide continuous black spots. Under-side of abdomen tinged in middle with rose pink, and two pink dorsal spots on thorax and one at base of wings. Head ochreous yellow.

Allowing for the fact that Trimen's descriptions were made from live or fresh examples, the larva and pupa of *zetes* and *acara* may be regarded as very similar.

At the Hope Department at Oxford, examples of pupae of *z. zetes* have recently been received, together with several specimens of a dipterous parasite (Fam. *Tachinidae*), which had emerged therefrom, also a batch of small parasitic cocoons which had been formed from a larva of *zetes*. These cocoons appear to be those of a hymenopterous parasite but the insects had emerged and escaped.

Acraea zetes is a variable species, the subspecies *acara* showing a wider range of variation than the typical western form. Godart's *A. jalema* is intermediate between *z. zetes* and *z. acara*. Felder's *caffra* is the form of *acara* having a white discal patch in the h.-w. Suffert's *tescea* differs but little from this form. Examples from Entebbe show a distinctly intermediate form having the ground-colour of the f.-w. red, but lacking the orange subapical patch characteristic of true *z. acara*. Neave found *zetes* in the Katanga country W. of the Luapula R. and *z. acara* in the Chambesi and Luangwa valleys. On Chishi I., L. Bangweolo the same naturalist took examples of an interesting form, two of which are now in the Oxford collection. These specimens are peculiar in having the discal spots of the h.-w. reduced to mere dots, causing them to

resemble very closely *A. astrigera*. Both specimens have a slight tendency to white discal suffusion in the h.-w. This and the f.-w. marginal black, surrounding large orange spots in areas 1b, and 2, are the principal features which serve to distinguish these examples from the other species named.

A. zetes is essentially the western form whilst *acara* is found in the south, east, and north-east. Godart's *jalema* is labelled Gaboon, whilst Aurivillius notes a similar specimen from Nyassaland. The *acara* subspecies also extends to German and British E. Africa, and northwards to the White Nile. Godart's types (two ♂♂ and one ♀) are in the Dufresne collection at Edinburgh.

Though some examples of *A. zetes* approximate very closely in appearance to typical specimens of *A. astrigera*, the male armature is very distinct, showing a much closer relationship with *chilo* and *hypoleuca*.

29. *ACRAEA CHILO*. Pl. VIII, f. 4.

Acræa chilo, Godman, Proc. Zool. Soc., p. 184, pl. 19, f. 4, 5 (1880); Aurivillius, Rhop. Aeth., p. 96 (1898); E. M. B. Sharpe, Proc. Zool. Soc., p. 369 (1898); Butler, Proc. Zool. Soc., p. 401 (1898); Roth. & Jord., Novit. Zool., xii, p. 179 (1905).

= *rosina*, Rogenhofer, Verh. z. b. Ges. Wien., 41, p. 565 (1891); in Baumann, Usambara, p. 326 (1891).

= *zetes*, var. *acara*, Pagenstecher, Jahrb. Nass. Ver. Nat., p. 133 (1902), (part).

= *wissmanni*, Weymer, Iris., p. 223 (1903).

♀ = *crystallina*, Gr.-Smith, Ann. Nat. Hist. (6), 5, p. 167 (1890); Rhop. Exot., 19 (*Acræa*), p. 7, pl. 3, f. 3, 4 (1892); Aurivillius, Rhop. Aeth., p. 89 (1898); Neave, Ent. Mo. Mag., p. 171 (1909); Aurivillius, Sjöstedt's Expedition, p. 3 (1910).

♀. f. *hoeneli*.

= *A. hoeneli*, Holland, Proc. U. S. Nat. Mus., 18, p. 746 (1896).

ABYSSINIA (Mojo R., Atschabo, Harar); SOMALILAND (Sso-Omadu, Solole, Wagga, Rugga Pass, Hankadeely, Berbera); BRITISH E. AFRICA (Voi R., Maziwa, Mitati, Taita, Taveta, Mombasa, Witu); GERMAN E. AFRICA (Kilimandjaro).

A. chilo chilo.

♂. Expanse 50-70 mm. Wings rosy pink. F.-w. narrowly black along costa. Apex and hind margin black and bearing a

marginal (submarginal at apex) row of seven deep orange spots. Black spots as follows. Two in cell, and one large obliquely transverse spot at end of cell on discocellulars. Midway between end of cell and apex a confluent oblique band of four spots. A large rounded spot in area 3, one slightly larger in area 2 touching median and nervule 1b. Beneath this and pointing towards hind angle an elongated slightly curved spot in area 1b. One subbasal spot in same area and a short black longitudinal basal streak between 1a and median.

H.-w. with a black basal area formed of more or less confluent spots and extending not quite half the length of cell. In Mombasa examples a subbasal spot in cell is usually well separated. Hind margin bordered with black about 3 mm. wide and bearing traces of paler internervular spots. Discal spots as follows. One in area 7, near middle. One in 6, 5, and 4, each respectively rather nearer margin than the one above it. One in 3 near end of cell, one in 2 nearer base, one in 1c nearer margin, and one in 1b, in a line with that in 2 (often obsolete on upperside). Usually a large spot at origin of nervule 5.

Underside. F.-w. as above but paler and sparsely scaled. Usually a very minute black dot near base above costal. H.-w. creamy ochreous. Hind margin black as on upperside but bearing seven distinct pale greenish spots, that in 1c doubled. Base black, enclosing six pale greenish spots. Area 9, and base of 8 rosy pink, with a black spot beyond precostal, a rose pink suffusion in areas 1a, 1b, 1c, adjacent to basal black.

Head and thorax black with a few pale spots above, and several beneath, basal half of abdomen black, with deep orange lateral spots, remainder deep orange. Claws unequal.

♀. Expanse 60–70 mm. Wings quite transparent, suffused with brown at base. F.-w. without spots, sometimes with a few scales at apex. H.-w. with spots as in ♂ but much smaller, the basal black being reduced to a spot in area 7, two in cell, and one in 1c, 1b, and 1a. Hind margin slightly scaled with blackish and bearing seven paler internervular spots. Underside as above but with a few rose pink scales at base in areas 9, 1c, and 1a. Head, thorax and abdomen dark brown, the white spots on head and thorax more distinct than in ♂.

This seems to be the usual form in British E. Africa.

A. chilo ♀. f. *hoeneli*.

Resembles the foregoing but the f.-w. black spots are present though much reduced. The hind marginal orange spots are also present but paler than in the male, whilst the h.-w. may

be more or less scaled with pink, and the black spots as large as in the male. Some examples of this form of ♀ are distinctly intermediate in pattern between the entirely transparent ♀ and the ordinary ♂. This second form is usually found in Somaliland.

The discovery of the identity of Grose-Smith's *A. crystallina* with the ♀ *A. chilo* is due to my friend Mr. S. A. Neave who came to this interesting conclusion after studying the series of Somaliland ♀ ♀ now in the Hope Department. It should be noted that Grose-Smith (*l. c.*) described his *crystallina* as a ♂. Unfortunately in this otherwise admirable work the sexing is most unreliable. *A. chilo* is very closely allied to *A. zetes acara* the male armature presenting but little difference. The ♂ *chilo* is however very constant in markings, and until I have seen an example which shows a pattern distinctly intermediate between it and *A. zetes acara*, I do not feel justified in regarding them as one species. *Acraea oscari* is equally closely allied and the advent of fuller material may cause all three to be regarded as specifically identical.

30. *ACRAEA OSCARI*. Pl. III, f. 6 (♂). Pl. VIII, f. 5.

Acraea oscari, Rothschild, Novit. Zool., ix, p. 595 (1902);

Eltringham, Novit. Zool., xviii, p. 151 (1911).

ABYSSINIA (Banka, Inderatcha, Charada).

♂. Expanse 60–70 mm. Wings dull red. F.-w. dusted with black along costa, basal black extending shortly into cell and rather further below median. A minute black spot on costa near base. Hind margin broadly black bearing seven submarginal dull orange-ochreous internervular spots. Large black spots as follows:—one subbasal and one median spot in cell, and one oblique transverse spot at end of cell on discocellulars. About midway between end of cell and apex an oblique transverse bar of confluent spots from costa to nervule 4. Below this and nearer end of cell a spot in area 3. In area 2 a spot, touching median and nervules 2 and 1b. In area 1b one submarginal and one subbasal spot, and between these, in area 1a, a median inner marginal spot. H.-w. with more or less confluent basal spots and a broad black hind margin bearing seven small whitish spots, that in 1c doubled. Discal area more or less suffused with whitish, and bearing black spots as follows:—in area 7 a subbasal and a median spot, followed by three in

6, 5, and 4, each progressively nearer to margin, one in area 3 rather more basally placed, a large spot in 2, touching median and nervules 2 and 1c. One spot in 1c, and one in 1b. Two spots obliquely placed on discocellulars, the upper one sometimes very small.

Underside, f.-w. as above but rather duller and the subapical area pinkish. H.-w. as above but discal area pinkish with red on inner margin, and along inner edge of hind marginal border; the latter bearing white spots larger than on the upperside. Black basal area bearing about four white spots. Areas 9 and 8 red, with a small black spot beyond precostal.

Head, thorax and abdomen black, the latter with white lateral spots. Claws unequal.

♀. Expanse 84 mm. Upperside resembles that of male but the ground-colour is brownish white (inclined to reddish in distal part of h.-w.), and the f.-w. submarginal spots are much paler yellow. Underside as in ♂ but ground-colour brownish white, base of f.-w. suffused with reddish, inner edge of h.-w. marginal black bordered with reddish ochreous; areas 9, 8, 1b, and 1a dull red.

This curious *Acraea* has the appearance of a very heavily marked and spotted example of *A. chilo*, but the wings are much more rounded. It is very closely allied to both *chilo* and *zetes acara*, indeed I am not quite satisfied that it is specifically distinct. The male armature is very similar to those of the two species named. *A. oscari* was described from Banka Malo, Abyssinia. Those in the National collection are from the Inderatcha and Charada Forests. (Kaffa.)

31. *ACRAEA HYPOLEUCA*. Pl. VIII, f. 3.

Acraea hypoleuca, Trimen, Trans. Ent. Soc., p. 2, pl. 1, f. 1 (1898); Aurivillius, Rhop. Aeth., p. 96 (1898).

GERMAN S.W. AFRICA (Rehoboth).

♂. Expanse 60 mm. Wings orange ochreous. F.-w. costa very narrowly black. Subapical area somewhat paler than ground-colour. Hind margin very narrowly black and bearing a band of eight deep yellow spots, widest at apex and becoming very narrow at hind angle. This band of spots bordered inwardly with a narrow black suffusion. Black spots as follows. A minute and indistinct subbasal spot in cell followed by a large transverse spot, and another on discocellulars. About midway between end of cell and apex an oblique transverse band of five confluent

rather small spots, the last almost separated. Beneath this but further from margin a spot in area 3. In area 2 a larger spot just below origin of nervule 3. In area 1b a reniform submarginal spot and a much smaller subbasal spot.

H.-w. very slightly suffused with black at base. Hind margin with a black border 2 mm. wide, bearing seven whitish internervular spots, that in 1c doubled. Discal spots, one in area 7 near middle, one in 6 nearer margin, one in 5 still nearer margin, one in 4 immediately beneath that in 5, one in 3 further from margin, one in 2 just beneath origin of nervule 3, and one in 1c nearer margin. An elongate transverse spot in cell and one at origin of nervule 5. A minute dot (in left wing only) below origin of nervule 6.

Underside. F.-w. as above but with subapical area creamy white. H.-w. creamy white with black spots as on upperside, and, in addition, basal and subbasal spots, one in area 8, one in 7, one in cell, and one each in 1c, 1b, and 1a.

Head and thorax black with pale spots. Basal part of abdomen blackish, remainder brownish yellow. Claws unequal.

The type, from which the above description is taken, still remains a unique example. Though closely allied to *A. chilo*, it has the appearance of being quite distinct from that species. Unfortunately no locality is marked on the label attached to the specimen, all the information there given being, "Coll. Watson, 1871." I think there is no doubt that the specimen was taken in Africa. There is in the Staudinger collection a specimen labelled *A. barberi*. This example is intermediate between Trimen's *A. barberi* ♂ and *hypoleuca*, and differs from the latter in the following points. There is a slight black basal suffusion, the black spots are larger, on the h.-w. underside the base is black enclosing white spots, and there are a few red internervular marks. I have carefully compared the specimen both with *barberi* and *hypoleuca*, and there is no doubt that it forms an almost perfect intermediate between them, with perhaps a somewhat stronger tendency towards the latter. This example was taken at Rehoboth in German S.W. Africa. It is most unfortunate that we are ignorant of the locality of *hypoleuca*. With the very small material at present at our disposal I consider it advisable to allow this form to remain separate, but at the same time I regard the specific distinction between *hypoleuca* and *zetes* as very doubtful in spite of the great difference between the typical patterns.

GROUP V.

32. *ACRAEA ANEMOSA*. Pl. VIII, f. 6. Pl. XVI, f. 18.

Acraea anemosa, Hewitson, Exot. Butt. (*Acraea*), pl. 3, f. 14, 15 (1865); Trimen, S. Af. Butt., 1, p. 157 (1887); Rogenhofer, Verh. d. k. k. z. b. Ges. Wien., 42, p. 574 (♀ abd., f. 2) (1892); Aurivillius, Rhop. Aeth., p. 91 (1898); Butler, Proc. Zool. Soc., p. 54 (1898); *l. c.*, p. 192 (1898); *l. c.*, p. 401 (1898); Marshall, Trans. Ent. Soc., p. 413 (1902); Dixey, Proc. Ent. Soc., p. iii (1906); Longstaff, Proc. Ent. Soc., p. xii (1906); Rogers, Trans. Ent. Soc., p. 525 (1908); Neave, Proc. Zool. Soc., p. 12 (1910); Fountaine (metam.), Trans. Ent. Soc., p. 60, pl. 10, f. 16a, 16b (1911).

DAMARALAND; KHAMA'S COUNTRY; TRANSVAAL; SWAZILAND; ZAMBESI R. (Victoria Falls); RHODESIA; PORTUGUESE E. AFRICA; GERMAN E. AFRICA; BRITISH E. AFRICA.

f. *arcticincta*, Butler (*A. arcticincta*), Ann. Nat. Hist. (5), 12, p. 103 (1883); Proc. Zool. Soc., p. 658 (1893); Aurivillius, Rhop. Aeth., p. 91 (1898).

= *anemosa*, Staudinger, Exot. Schmett, 1, p. 83, pl. 33 (1885).
(Appears not to be confined to any particular locality.)

f. *interrupta*, Thureau, Berl. Ent. Zeit., p. 301 (1903).

UGANDA.

f. *mosana*, Suffert, Iris., p. 20 (1904).

(No loc.)

f. *dubiosa*, Suffert, *l. c.*

GERMAN E. AFRICA (Tanga); BRITISH E. AFRICA (Mombasa).

f. *ufipana*, Strand, Mitt. d. Zool. Mus., Berl., p. 279 (1911).

GERMAN E. AFRICA (Mwera); RHODESIA (Alala Plateau).

f. *urungensis*, Strand, *l. c.*, 1911.

GERMAN E. AFRICA (Kitungulu).

A. anemosa anemosa.

♂. Expanse 60-70 mm. F.-w. deep yellow to orange. Costa narrowly black. Hind margin black about 4 mm. wide at apex rapidly narrowing to a thin black line which reaches the hind angle. At base a black patch having a variably shaped but usually well-defined outline, extending into cell as far as origin of nervule 2, usually about the same distance into area 1b, but never into area 2. At end of cell on discocellulars a linear black spot of variable width (sometimes absent). Beyond cell

an oblique transverse bar of coalescent black spots extending from costa to nervule 4, followed by a spot in area 3, which may be very minute or so large as to be confluent with those above it. In area 2, a little beyond origin of nervule 3, a spot of very variable size (sometimes absent). In 1b immediately below this there may be another spot. (In examples from Mombasa these two spots are nearly always large and well developed.)

H.-w. brick red. A fairly well-defined basal black patch, extending to nearly half the length of cell. A hind-marginal black border of very variable width (4 to 10 mm.) the inner edge of which may be well defined or much suffused. Rarely seven minute whitish submarginal dots. In one or two examples before me there are a few minute discal spots, visible only on the upperside, their position being the same as in *A. astrigera*.

Underside. F.-w. Black markings as on upperside. Ground-colour a little paler. The subapical area with a considerable powdering of white scales. H.-w. Black markings as on upperside. Marginal band bears seven small white spots, that in area 1c being doubled. In area 1b close to inner margin a narrow white streak. (Sometimes also in 1a.) Basal black patch bears about eight or nine white spots. Discal area pale pink bordered with darker pink basally, distally, and at inner margin. (Along the inner edge of the black hind-marginal border this dark pink nearly always forms a more continuous band than in *A. velwitschii*.) Thorax black with white spots above and below, abdomen black shading to deep ochreous towards extremity, brown to ochreous beneath, and bearing white lateral spots. Claws unequal.

♀. 65-70 mm. Ground-colour above and below duller than in ♂ and h.-w. sometimes dusky brown. Abdomen usually blacker. Other features as in ♂ and with about same range of variation.

A. anemosa f. *arcticincta*, Butl.

A form with an unusually narrow h.-w. hind-marginal border.

A. anemosa f. *interrupta*, Thur.

The reddish yellow ground-colour extends into cell as a narrow wedge-shaped spot in the black basal area of the f.-w. from the subcostal towards the median, so that an elongated quadrate spot about 2 mm. broad is thereby produced. (1 ♂ Uganda.)

A. anemosa f. *mosana*, Suff.

Discal spots absent in f.-w. (1 ♂ in Berl. Mus.)

A. anemosa f. *dubiosa*, Suff.

Five minute discal spots in h.-w. The author seems to suggest that this may be a hybrid between *anemosa* and *astrigera*. Of this I do not think there is any evidence. Three examples before me (from Mombasa) agree with Suffert's description. The ♂ armature is in no respect different from that of *anemosa*.

A. anemosa f. *ufipana*, Strand.

H.-w. border narrow as in *arcticincta*. A central transverse band of three black spots in f.-w. The first on discocellulars, the second beyond it in area 2, the third in 1b. In area 3 beyond the discal spot, a round black spot the same size as those in 1b, and 2. The black basal area of f.-w. reaches the middle of cell and is 9 mm. long. No white spots on h.-w. border.

There is a similar example in the Oxford Museum from the Alala Plateau.

A. anemosa f. *urungensis*.

Resembles f. *interrupta*, Thur., but the f.-w basal black is much reduced, somewhat as in *welwitschii*, Rogenhofer, forming a blackish streak in the upper half of cell. The h.-w. basal black is also reduced. The discocellulars only indistinctly dusted with black. At inner edge of marginal border of the h.-w. underside there are seven or eight white spots enclosed by crescentic red spots. This example is scarcely separable from the ♀ of *A. welwitschii lobemba*.

The early stages of *anemosa anemosa* are thus described by Miss Fountaine (*l. c.*)—

"This very handsome, extremely active little larva, occurred very commonly at Macequece, on almost every available piece of its food-plant, a creeper, identified at the Board of Agriculture at Pretoria as (most probably) *Modecca abyssinica*. I first discovered it, in the usual way, by watching a ♀ laying eggs; these are laid in batches of various sizes, some with about ten eggs together, others having as many as twenty-five or even more. The larva is very easy to rear, and feeds up very rapidly, and it remains only about eight days in pupa; but where the difficulty comes in, is that the supply of its food-plant should meet the demand, as it is a dark-coloured very inconspicuous little creeper, most difficult to find, and when a piece is discovered it is generally already sustain-

ing two or three more larvae of the same species. In colour it is a bright shiny red-russet shaded into deep yellow at the extremities, the spines are long, furry and black. The pupa is dingy white in ground-colour, the wing case the same, but heavily outlined and veined in black, the rows of abdominal spots are deep orange, very heavily surrounded with black."

The species extends right across Africa from Damara-land to Delagoa Bay and thence northwards to British E. Africa. It has been noted by both Dixey and Marshall as having an unpleasant smell. Though distinct from *A. astrigera* it is so closely allied to *A. welwitschii* that it is somewhat doubtful whether each should be accorded specific rank. There is a slight difference in the structure of the respective ♀ genital plates. I have however seen specimens of *anemosa* ♀ which could not with certainty be distinguished by colour and pattern from some ♀♀ of *welwitschii lobemba*. The form *urungensis* has this appearance.

33. *ACRAEA WELWITSCHII*. Pl. VIII, f. 7.

Acraea welwitschii, Rogenhofer, Verh. Ges. Wien, 42, p. 573-4, f. 1 (♀ abd.) (1892); Aurivillius, Rhop. Aeth., p. 91, f. 10 (?) (1898).

= *anemosa*, var. Dewitz, Nov. Act. Nat. Cur., 41, 2, p. (17) (189), (1879).*

ANGOLA (Loanda, Ceramba, Bange Ngola, Bumba).

A. welwitschii alboradiata, subsp.

= *A. anemosa*, ab., Aurivillius, Rhop. Aeth., p. 91 (1898); Trimen, S. Af. Butt., 1, p. 158 (1887); Proc. Zool. Soc., p. 28 (1894).

VICTORIA FALLS.

A. welwitschii lobemba, subsp. n.

= *A. welwitschii*, Neave, Proc. Zool. Soc., p. 12, pl. 1, f. 2 (1910).

L. BANGWEOLO; LUALABA R.

A. welwitschii welwitschii. Pl. II, f. 4 (♂), f. 5 (♀).

♂. Expanse 50-64 mm. F.-w. bright red. A basal black patch of somewhat irregular outline, extending about half the length of cell and thence to inner margin, not encroaching upon area 2. Costa dusted with black. A hind-marginal band of

* I have examined the example described by Dewitz, and it agrees with the typical ♀ of *welwitschii*.

black 4 to 6 mm. wide at apex and tapering to nothing at hind angle, its inner edge not sharply defined and tending to brownish, sometimes with red scales on the internervular folds. A little beyond cell an oblique discal bar of black, widest at costa and extending to nervure 4, followed by a small round spot in area 3. Below nervule 3 and a little beyond its origin, a rounded spot (sometimes absent). At end of cell on discocellulars an oblique transverse black spot. H.-w. with a broad inwardly suffused black hind-marginal border reaching nearly to the cell. Base suffused with black extending to half the length of cell. Discal area white, areas 7 and 6, and 1b at anal angle suffused with pink, sometimes a slight powdering of the same colour in 4 and 5, at outer edge of white. In some examples a faint discal row of greyish spots in 7, 6, 5, and 4 (gradually lost in marginal border). Fringes of both wings black touched with white between the nervules.

Underside. F.-w. deep pink, the subapical area powdered with greyish white, and marked on the internervular rays with orange ochreous. Apical black much reduced, remaining black markings as on upperside, a minute white subbasal spot above costal nervure. H.-w. Black basal and marginal areas as on upperside but sharply defined. Discal area milk white bordered basally and distally with internervular red markings. Basal black bears eight or nine white spots, and on marginal black is a row of seven minute white spots, that in 1c doubled. A submarginal white line in 1b, and sometimes also in 1a.

Thorax black with two or three white spots above and many below. Abdomen black at base shading into orange ochreous at extremity, and laterally spotted with white. Claws unequal.

♀. Expanse 55-60 mm. F.-w. dull ochreous. Black markings as in ♂. Sometimes a powdering of white at costa in subapical region. Basal black tends to be reduced between median and inner margin. H.-w. suffused with black at base extending to about one-third the length of cell. A broad hind-marginal black border more clearly defined than in ♂ and sometimes showing extremely minute internervular whitish dots. Remainder of wing dull ochreous with a central white suffusion from nervule 7 to inner margin.

Underside. F.-w. paler ochreous. A minute white spot near base above costa. Subapical area milk white, with internervular ochreous markings. Apical black much reduced. H.-w. as on upperside, but whole discal area creamy white bordered basally and distally with red. Basal black bears white spots and hind-marginal black border bears larger white spots than in the male, and between it and the red margin of the discal area are inter-

nervular crescentic spots of the ground-colour. Fringes of both wings spotted with white as in ♂. Thorax black, spotted with ochreous above and white below. Abdomen ochreous with lateral white spots.

A. velwitschii alboradiata, subsp.

♂. Expanse 58-60 mm. F.-w. deep pink. A black basal suffusion extending about one-third the length of cell and not reaching origin of nervule 2. Costa black. A black apical and hind-marginal border narrower at apex than in *velwitschii* and very narrow along margin, its inner edge rather clearly defined. At end of cell on discocellulars a transverse linear spot (sometimes absent). A little beyond cell a band of black, broadest at costa and ending at nervule 4. Subapical area suffused with white and marked between nervules with orange ochreous. Occasionally a black spot in 3 just below discal band, and a second in 2 a little further from margin. Very rarely a spot in 1b almost directly under that in 2. H.-w. white with a broad well-defined black border and a small black basal suffusion. Area 7 and distal portions of 6, 5, and 4 suffused with pink, the same colour sometimes extending along inner edge of black border even as far as inner margin.

Underside. F.-w. as on upperside but ground-colour paler. A minute white dot near base above costa. H.-w. as on upperside, but pink only at basal and distal edges of white area. Basal and marginal black with white spots as in *velwitschii*, but those on border larger than in type form. Thorax and abdomen as in *velwitschii*.

♀. Resembles ♂ but generally somewhat larger.

A. velwitschii lobemba, subsp.

♂. Expanse 56-70 mm. Wings deep cherry red. F.-w. with a sooty black basal suffusion extending in cell to origin of nervule 2, and thence to inner margin, costa black. Hind margin broadly black at apex gradually narrowing to hind angle. A little beyond cell, an oblique discal band of black broadest at costa and ending at nervule 4, followed by, and sometimes confluent with, a rounded spot in 3. Below nervule 3 and just beyond its origin a rounded spot. In area 1b about 6 mm. from margin a crescentic spot followed by a double spot nearer margin. (These last may be absent.)

H.-w. with black basal suffusion extending to half the length of cell and bearing numerous white hairs. A broad black hind-marginal border, rarely bearing minute white internervular spots.

Underside. F.-w. Rose pink. A minute white dot near base above costal. Black markings as on upperside but apical and marginal border much reduced. Subapical area bluish white with elongated triangular internervular orange marks. H.-w. Basal black very sharply defined and spotted with white as in previous forms. Broad black marginal border with medium-sized internervular white spots, a white submarginal streak in 1b, and 1a. Discal area pinkish white bordered basally and distally with red internervular marks. Fringes in both wings spotted with white. Thorax sooty black with two or four white spots above and many below. Abdomen black above, to near extremity, remainder deep orange.

♀. Resembles ♂ but f.-w. brownish ochreous, and basal black much reduced in areas 1a and 1b, hind-marginal border much narrower. H.-w. rather duller than in ♂. Underside with ground-colour of apical area of f.-w., and discal area of h.-w., creamy white. H.-w. hind margin spots creamy white and larger. Abdomen, and in some cases thorax, reddish ochreous. Dorsal thoracic spots more conspicuous.

Some ♀ examples are much paler and lack the discal spots in f.-w. An example of this kind before me is almost indistinguishable from some specimens of *A. anemosa*.

That *welwitschii* and *anemosa* are really different species seems to me extremely doubtful. Series of preparations of the genitalia show that, allowing for a narrow limit of individual variation, there is little or no constant difference. In the ♀ genital plate there is a small but noticeable difference, those of *welwitschii* and *alboradiata* being alike and differing slightly from that of *anemosa*. With our present conception of species-formation it is inevitable that we should occasionally find forms which are so near to the line of specific distinction that we cannot say with certainty, on which side they lie. Meanwhile I have kept *anemosa* separate from *welwitschii*, though it matters little whether we regard them as specifically distinct or not.

A single ♂ from Angollo (Angola) in the Tring collection is intermediate between *welwitschii* and *alboradiata* and has a white mark in area 1b of f.-w.

Neither Aurivillius' description nor figure of *welwitschii* quite agrees with the original reference of Rogenhofer. That author describes the ♀, and I have been fortunate enough to obtain a cotype from amongst the Felder

specimens at Tring. With it is one ♀ and four ♂♂ from the same locality, and these specimens are as here described. All have white patches on the h.-w., and in this respect, as also in the ground-colour, they differ from the examples described by Neave. The latter I must therefore regard as a subspecies of typical *welwitschii*. Aurivillius' figure agrees more nearly with this form than with the type. So far as I am aware the typical ♂ is here described for the first time. Rogenhofer, in order to distinguish between his species and *anemosa* gives text figures of the female "seal" of each species and points out certain differences. This peculiar structure is not however reliable for the discovery of minute differences. I have placed a female of each form under the microscope, in such a position that the extremity of each abdomen could be clearly seen in the field at the same time, and in this case the two structures appeared to be identical as indeed we should expect when the male organs are so very similar.

The type form of *welwitschii* is known to me only from Angola, those before me bearing the labels Loanda, Ceramba, Bange Ngola, and Bumba. The subspecies *alboradiata* appears to occur only in the neighbourhood of the Victoria Falls on the Zambesi. The specimen described by Trimen as a variety of *anemosa*, is labelled Damaraland, and as a strip of the northern part of that province almost reaches the neighbourhood of the Falls, the example may have been taken in that region. The subspecies *lobemba* was taken in large numbers by Neave in the region of L. Bangweolo, and a few examples as far W. as the Lualaba River.

34. *ACRAEA PSEUDOLYCIA*. Pl. VIII, f. 8.

Acraea pseudolycia, Butler, Cist. Ent., 1, p. 213 (1874); Proc. Zool. Soc., p. 658 (1893); Aurivillius (*A. zetes*, var.), Rhop. Aeth., p. 91 (1898); Eltringham, Novit. Zool., xviii, p. 151 (1911).

ANGOLA (Pungo Andongo, Canhoca).

f. *astrigera*, Butler (*A. astrigera*), Proc. Zool. Soc., p. 421, pl. 25 f. 5 (1899); Suffert, Iris., p. 23 (1904); Neave, Proc. Zool. Soc., p. 12 (1910).

BRITISH E. AFRICA (Machakos, Campi-y-Simba, Ft. Hall, Kenya); RHODESIA (near L. Young); GERMAN E. AFRICA (Mpwapa, Usambara, Mhonda, Uhehe, Ugogo, Rukwa).

♀ *f. emini*, Weymer, *Iris.*, p. 221, pl. 2, f. 2 (1903); Suffert, *Iris.*, p. 23 (1904); Eltringham, *Novit. Zool.*, xviii, p. 151 (1911).

GERMAN E. AFRICA (Mhonda, Ugogo).

f. brunnea, Eltringham, *Novit. Zool.*, xviii, p. 151 (1911).

GERMAN E. AFRICA (Rukwa Steppe, Masindi); BRITISH E. AFRICA (Kitui); UGANDA (Unyoro, Entebbe); N.E. RHODESIA (Awemba); ANGOLA (Makweta, Guimbungo, Pungo Andongo).

A. pseudolycia pseudolycia. Pl. I, f. 5 (♂).

Expanse about 74 mm. F.-w. white. Base suffused with black, costa powdered with blackish. Apex rather broadly black, and hind margin deeply suffused with sepia. There is a submarginal row of rather ill-defined deep ochreous spots. Black spots as follows:—One in cell near base, one, large, in cell over origin of nervule 2, an irregular patch of black beyond cell, partly confluent with a spot on discocellulars. A spot near base of area 2, a subbasal and a submarginal in 1b, and a central spot in 1a.

H.-w. white with some black at base, enclosing a white spot near base of cell. A discal row of black spots in 7, 6, 5, 4, and 3, and a spot in 2 near origin of nervule 3. A broad black marginal border edentate on the nervules, and inwardly edged with deep ochreous, and bearing white internervular dots. Underside resembles the upper, but in f.-w. there is less dark marginal suffusion, and in the h.-w. the basal black encloses six or seven white spots, and there is an additional black spot in 1b. The white spots in the border are larger.

Head and thorax black with white spots. Abdomen black at base, remainder ochreous, and bears white lateral spots. Claws unequal.

♀. Resembles ♂ but wings are more rounded.

A. pseudolycia astrigera. Pl. I, f. 1 (♂), f. 10 (♀).

♂. Expanse 55–70 mm. Wings rosy red (liable to vary much in intensity). F.-w. with a black basal suffusion. Costa narrowly black. A black hind-marginal border moderately wide at apex and very narrow from nervule 4 to hind angle. Black spots as follows:—In cell, one near base (often obscured), one a little beyond middle, and a linear spot at end on discocellulars. One in 1b near base (often absent or obscured by the basal black) and one near margin, sometimes followed by an indistinct submarginal spot. One in 2 close to median,

and one in 3, above which, and a little beyond cell is a transverse patch widening towards and joining with the costal black. The subapical area between this patch and the apex is deep orange, this colour extending to the hind angle.

H.-w. with black basal patch extending to about middle of cell and a black marginal border about 3 mm. wide, bearing seven minute white dots (sometimes very indistinct). A discal row of small black spots, very variable in number and size, when all present one in each internervular space. (These spots are more distinct on underside.)

Underside. F.-w. rosy pink, spots as on upperside, with an additional minute dot near base above costal, preceded by a white dot at base, and in some specimens an extra black spot at base of cell. The separation of the basal black into spots distinguishes this species from *anemosa*. The deep orange subapical area powdered with white which divides the yellow ground-colour into more or less triangular spots. H.-w. with a sharply defined black basal patch edged with red and bearing at least six white spots, two in cell, one in 1a, 1b, 1c, and 7. Black margin as on upperside but with larger white spots (that in 1c doubled), and inner edge bordered with red internervular marks. Discal black spots, when all present, as follows:—One in 7, 6, 5, and 4, roughly parallel to margin, one in 3 rather nearer base, one in 2, close to median, one in 1c on a level with that in 3 (usually doubled), one in 1b nearer base, and one in 1a often joined to basal black.

Fringes, especially in h.-w., marked with white between nervules. Thorax black with four white spots above and about eight below. Basal portion of abdomen black, remainder deep orange, and having white or whitish lateral spots.

♀. Expanse 57–70 mm. Wings usually rather more rounded than in ♂, and margin of h.-w. tending to be somewhat serrated. Ground-colour variable but paler and much duller than in ♂. Basal black often very faint on upperside, discal spots of h.-w. usually larger than in ♂, though sometimes only showing through from underside. Underside f.-w. pale yellowish pink, the white subapical powdering more accentuated than in ♂. Discal portion of h.-w. creamy white. Distal portion of abdomen dull ochreous instead of orange.

A. pseudolycia ♀, f. *emini*. Pl. I, f. 2.

Differs from the *astrigera* form in its usually larger size, and in the great reduction or absence of dark basal suffusion especially in the f.-w. The outer edge of h.-w. has the appearance of being

serrated though this is largely due to the depth of the white internervular fringes. The discal spots of h.-w. are well developed and the ground-colour tends to invade the marginal black along the nervules.

A. astrigera, f. *brunnea*. Pl. I, f. 4 (♂), f. 3 (♀).

The rosy red and orange of the *astrigera* form is here replaced by dull brownish ochreous, and the two sexes are alike in colour. In Angola examples there is sometimes a more or less distinct white subapical bar on the upperside of the f.-w. The f.-w. apical and hind-marginal black may be broader, suffused, and bear marginal yellowish marks. H.-w. discal spots often larger than in typical form.

It is not without much consideration that I have arrived at the conclusions embodied in the above synonymy. Isolated examples of the different forms would provide comparatively little evidence of specific identity, but I have been fortunate enough to secure from various sources a fine series numbering between thirty and forty examples, the localities ranging from German E. Africa to Angola. There are males and females of each form (except f. *emini*), and a series of preparations of the genitalia shows no differences of structure. Weymer assumed that his *Acraea emini* was a ♂, though owing to the imperfection of the specimen he was unable definitely to decide. It is larger, a little brighter in colour than the ordinary ♀ of the form *astrigera*, and has more rounded wings, but cannot be specifically separated. Moreover I have before me a ♀ which 'agrees precisely in shape, depth of colour, and in every detail of pattern with Weymer's description and figure of *Acraea emini*. This specimen is accompanied by two ♂♂ which, except for a slight difference in depth of tint of the ground-colour, agree precisely with *astrigera*. Suffert, on the assumption that Weymer's specimen was a male, recorded (*l. c.*) an example of the female which he described as very similar to the supposed male. From these facts I conclude that Weymer's *A. emini* is a female, and further that it is a ♀ form of *pseudolydia astrigera*.

An examination of the dates borne by examples before me shows that the different forms are not seasonal. The geographical distribution is somewhat peculiar. The red and orange form seems only to occur at the eastern end of the range of the species, but it is accompanied

by the form *brunnea* and by intermediates. The white or typical form appears only to occur in Angola, but is there accompanied by the *brunnea* form and by intermediates. Thus strictly speaking *astrigera* is a subspecies in relation to the typical *pseudolydia* whilst *brunnea* is a form of both.

The male genital armature of all these forms is the same, but differs from that of *anemosa* and *welwitschii*.

35. *ACRAEA TURNA*. Pl. VIII, f. 9.

Acraea turna, Mabille, Pet. Nouv. Ent., 2, p. 158 (1877);
Hist. Nat. Mad. Lep., 1, p. 99, pl. 12, f. 8, 9 (1885-7);
Aurivillius, Rhop. Aeth., p. 95 (1898).

f. *marmorata*, Smith & Kirby (*A. marmorata*), Rhop. Exot.,
19 (*Acraea*), p. 9, pl. 3, f. 7, 8 (1892); Aurivillius,
Voeltzkow Exp., p. 315 (1909).

MADAGASCAR (Morondava, Tulear, Mahobo).

♂. Expanse about 60 mm. Wings creamy white with sepia black spots and markings. F.-w. base suffused with sepia extending to two-thirds the length of cell, slightly into area 2, in upper part of 1b nearly to middle, and slightly less in 1a. Costa dusted with sepia. An apical and hind-marginal border about 5 mm. wide at apex narrowing to about 2 mm. along margin to hind angle and bearing ochreous internervular spots. A small spot in cell rather before middle followed by a larger obliquely transverse spot, and usually a black mark on discocellulars. Beyond the cell a discal band of spots, wide at costa, becoming narrower posteriorly, and ending (in area 3) in a large rounded spot. A large spot in 2 close to median. A submarginal and a subbasal spot in 1b. H.-w. with a slight basal suffusion and a hind-marginal border about 4 mm. wide, the inner edge of which is rather indistinctly defined but with a marked indentation of the ground-colour in area 4. On this border and close to margin is a row of seven minute internervular white spots. Margin slightly serrated and fringes spotted with white. A discal row of eight spots, the first four (in 7, 6, 5, 4) lie almost in a straight line from middle of costa to middle of hind margin (sometimes this line of spots has a slight outward curve). The fifth spot is in 3 and further from margin, the sixth in 2 near median, the seventh and eighth (in 1c and 1b) nearer margin. The basal and subbasal spots are more easily seen on underside, but those in cell and 1c are well developed above.

Underside. F.-w. along costa to end of cell, for two-thirds of length of cell, and slightly in 1b and 1a, suffused with dull pink, otherwise much as on upperside but paler and markings less well defined. A whitish powdering round yellow apical submarginal spots. A minute black dot on costa about 3 mm. from base, a linear black mark in area 11 near middle, and a black dot in same area above end of cell.

H.-w. as on upperside but whiter and without basal suffusion; the hind-marginal border much paler, and the white dots are followed inwardly by elongated ochreous spots. The discal spots are as on upperside. A basal spot in 8 near precostal, a crescentic spot in 7, a small round spot followed by a second of crescentic shape in cell, one in 1c, 1b, and 1a. Sometimes a dot near end of area 1a. Area 9, base of 1a, and a small mark in 7, and 1c pink. Head black with a few pale spots, thorax black above with whitish lateral spots, and whitish below, abdomen black above, whitish below, with pale rings and lateral spots. Claws unequal.

♀. Mabilie describes the ♀ as resembling the ♂ but more heavily marked. A ♀ example before me is rather less heavily marked than the male and the ground-colour is pure white. The f.-w. is much more rounded than that of the ♂.

A. turna f. *marmorata*.

In this form the ground-colour is bright ochreous, the dark markings are heavy and in the f.-w. partly confluent. In one example before me the two cell spots in h.-w. coalesce to form a black ring. The example figured by Grose-Smith is stated to be a ♀ and has the h.-w. rather paler than the primaries.

The difference in colour from that of the typical form is not seasonal and both the latter and f. *marmorata* occur together.

A. turna is rare in collections. It appears to be allied to *A. pseudolycia*.

GROUP VI.

36. *ACRAEA EGINA*. Pl. VIII, f. 1. Pl. XVI, f. 17.

Acraea egina, Cramer, Pap. Exot., (*Pap.*) 1, p. 64, pl. 39, f. F, G (1775); Staudinger, Exot. Schmett., (*A.*) 1, p. 83, pl. 33, ♂ and ♀ (1885); Haase, Bibl. Zool., 8, 2, pl. 4, f. 26 (1891); Karsch, Berl. Ent. Zeit., 38, p. 195, 198 (1893); Aurivillius, Rhop. Aeth., p. 92 (1898); (metam.), Arkiv. för Zool., Bd. 3, No. 1, figs. (1905); Neave, Proc. Zool. Soc., p. 13,

(1910); Eltringham, Af. Mim. Butt., p. 66, pl. 6, f. 1, 2
(1910); Grünberg, Sitzb. Ges. Nat. Fr., p. 148 (1910).

= *rudolphina*, Herbst, Natur. Schmett, (*Pap.*) 5, p. 7, pl. 81, f. 1, 2 (1792).

♀ = *persephone*, Fabricius, (*Pap.*) Syst. Ent., 3, 1, p. 174 (1793);
Godart, Enc. Méth., (*A.*) 9, p. 234 (1819).

= *zidora*, Godart, Enc. Méth., 9, p. 237 (1819); Lucas, Lep. Exot., pl. 52, f. 1 (1835); Blanchard, Cuvier, Reg. Animal, ed. 3 (*Insecta*), pl. 134, f. 2 (1836); Lucas, in Chenu, Enc. Hist. Nat. Pap., p. 11, f. 33 (1853).

SENEGAL; S. LEONE; GOLD COAST; LAGOS; LIBERIA;
ASHANTI; TOGO; CAMEROON; GABOON; BANGALA; ANGOLA;
CONGO (Lokolele, Stanley Pool); N.E. RHODESIA; UGANDA
(Entebbe, Unyoro, Pt. Alice, Kampala, Sesse I.); BRITISH
E. AFRICA (Nandi); GERMAN E. AFRICA (Kwidgwi I., Ukerewe
I., Bukoba); NYASSALAND (Bandawe); PEMBA I.

A. egina, f. *harrisoni*, Em. M. B. Sharpe, Entomologist, p. 132
(1904).

RHODESIA (L. Bangweolo, Kalungwisi Valley, Lofu Valley);
UGANDA (Sesse I.); BRITISH E. AFRICA (Tiriki Hills); NYASSA-
LAND (Bandawe).

A. egina areca, subsp.

Mabille, Ann. Ent. Fr. (6), 8 Bull., p. 169 (1888); Mabille
& Vuillot, Nov. Lep., 10, p. 100, pl. 14, f. 5 (1893); Butler
(♀), Proc. Zool. Soc., 1893, p. 658 (1894); Aurivillius,
Rhop. Aeth., p. 93 (1908); Eltringham, Af. Mim. Butt., p.
66 (1910).

= *khara*, Gr.-Smith, Ann. Nat. Hist. (6), 3, p. 128 (1889);
Smith & Kirby, Rhop. Exot. (*Acraea*), pl. 2, f. 1, 2
(1889); Rogenhofer, Ann. Mus. Wien, 6, p. 457 (1891).

NYASSALAND (Zomba); GERMAN E. AFRICA; BRITISH E.
AFRICA; PEMBA I.; S.E. RHODESIA.

A. egina medea, subsp.

Cramer, Pap. Exot., (*Pap.*) 1, p. 128, pl. 81, f. C, D (1775);
Herbst, Natur. Schmett, 4, p. 200, pl. 80, f. 3, 4 (1790);
Kirby, Handb. Lep., (*A.*) 1, p. 38, pl. 7, f. 4 (1894); Auri-
villius, Rhop. Aeth., p. 92 (1898); Ann. del Mus. Civ.
Genov., 3, vol. 4 (1910).

= *pasiphaë*, Fabricius, Spec. Ins., (*Pap.*) 2, p. 33 (1781); Godart,
Enc. Méth., (*A.*) 9, p. 235 (1819); Duncan, For. Butt., p. 143,
pl. 12, f. 4 (1837).

= *medoa*, Palisot de Beauvois, (*Pap.*) Ins. Af. Amer., p. 220,
pl. 6, f. 2a, 2b (1805).

= *saronis*, Hübner, (*Telch.*) Verz. bek. Schmett, p. 27 (1816).
PRINCES I., W. AFRICA ; ? SENEGAL.

A. egina egina. Pl. VI, f. 15 (larva).

♂. Expanse 70-80 mm. F.-w. sepia black, the discal area from about middle of cell to the subapical region rather more thinly scaled, nervures and rays black. In areas 1a, and 1b a bright red patch commencing beyond middle and terminating just before hind margin. Black spots of rather suffused outline as follows. One in cell just above origin of nervule 2, and one on end of cell; just beyond cell a row of five more or less confluent spots in 10, 6, 5, 4, and 3, one spot in area 2 adjacent to median, and beneath this but nearer margin a spot in 1b; in the same area a small subbasal spot nearly touching the median. H.-w. bright red, paler at costa and inner margin, with black basal area extending to end of cell, and a black hind-marginal border about 2 mm. wide, rather deeply edentate at the nervules and sometimes showing traces of pale internervular spots. Black discal and basal spots as on underside, but more or less hidden by basal suffusion.

Underside. F.-w. pale sepia, with dark internervular rays and spots as on upperside. Above costal a basal and a subbasal black spot. Base of area 1b faintly pink, and red in areas in 1a and 1b replaced by dull pink. H.-w. Base red, followed by greenish grey with internervular patches of ochreous. Median discal band dull pink, edged with dark ochreous at junction with black hind-marginal border, the latter bearing seven quadrate dull green internervular spots. Inner margin pale yellowish green. Black discal and basal spots as follows:—A discal band of nine, those in 7 to 4 roughly parallel to margin (that in 5 small or wanting), the fifth (in 3) adjacent to end of cell, the sixth touching median and 2, the seventh rather nearer margin, the eighth nearer base, the ninth still nearer base. Two coalescent spots on discocellulars, one subbasal and one median in cell; one in 8 near precostal, one basal and one subbasal in 1c, and one in 1b and 1a, the latter nearer base than the former. Head and thorax black, a white line between the eyes and two on thorax, with lateral crimson tufts on collar. Basal part of abdomen black with ochreous lateral spots. Remainder orange ochreous. Claws unequal.

♀. Expanse 80-90 mm. F.-w. thinly scaled, dull sepia grey, sometimes with a median pinkish suffusion. A more or less developed whitish subapical bar. Spots as in ♂ but dull grey. H.-w. slightly darker, sometimes reddish grey, spots and

marginal border as in ♂ but paler. Underside. F.-w. dull greenish grey, sometimes pinkish from subbasal to subapical area. Nervules and rays well marked, blackish. Spots as on upperside. H.-w. pale greenish grey, spots and markings as in ♂ but usually paler. In some examples the spots and hind-marginal border are as in the ♂ but the basal red is absent and the other colours only faintly represented. Abdomen black above, ochreous beneath, and with ochreous lateral spots.

Examples of *A. egina* from British E. Africa frequently have the red colour of a more brilliant and rosy tinge than in W. African examples, and the colouring of the underside is very brilliant. In the f.-w. the apical internervular spaces are deep orange, and areas 1a and 1b bright pink. In the h.-w. the base is rose pink, the sub-basal spots and nervures are surrounded with green, the discal area is deep orange with a median pink suffusion, and the hind-marginal border is green with a black inner edge and black on the ends of the nervules.

Many examples from N.E. Rhodesia are of this brilliant colouring with the apical red streaks of the *harrisoni* form. Some of the examples taken by Neave on Chirui and Chishi Is., L. Bangweolo, are of the *harrisoni* form.

A. egina, f. *harrisoni*.

In this form there are in the ♂ (and less obviously in the ♀) streaks of the red colour in the internervular spaces of the apical portion of the f.-w. The underside colouring is much more brilliant than in ordinary examples. In the ♀ the f.-w. is much suffused with reddish and the h.-w. is red as in the ♂ but rather paler and the black spots smaller.

A. egina areca, subsp.

♂. Expanse 70-80 mm. F.-w. orange red with a trace of an oblique whitish subapical bar; costa, apex, and hind margin brownish black and a suffusion of same colour at base and on nervures. Black spots as in *egina* but larger and the subapical discal row sometimes confluent with that on end of cell. H.-w. orange red with black suffusion at base, but of much less extent than in *egina egina*, and a black hind-marginal border about 2 mm. wide rarely slightly paler between the nervules. Spots as in *egina egina* but often smaller, less clearly defined, or obsolescent.

Underside. F.-w. as above but much paler. H.-w. base dull red followed by orange, inner margin pale yellowish green, and a greenish dusting round spots and nervules. Discal area

yellowish pink, orange at outer edge. Spots on hind marginal band pale green.

♀. Expanse 80-90 mm. F.-w. pinkish ochreous, a well-marked white, semitransparent oblique subapical bar. Apex, hind margin, and spots dull sepia black. H.-w. pale to darker ochreous with a dusky basal suffusion on a reddish ground, and a black hind-marginal border, inwardly edged with orange ochreous. Underside a pale replica of the upper but the ground-colour of h.-w. is greenish with a few red markings at base.

A. egina medea, subsp. Pl. II, f. 1 (♂).

♂. Expanse 70 mm. F.-w. black at base; costa, apex, and hind margin broadly black. Discal area red with large confluent black spots, of which there are one in cell above origin of 2, one on end of cell, a broad band of spots beyond cell from costa to nervule 3, one at base of area 2, beneath and touching the latter a spot in 1b, and a second in the same area between base and origin of 2.

H.-w. black at base with a broad black hind-marginal border. Central area red, broken up by large and confluent black spots corresponding to those on underside.

Underside. F.-w. Base, costa, and hind margin sage green. From nervule 6 to 1 this colour is broken into spots by heavy black marginal arches between which, and the discal spots the wing is deep ochreous. The spots beyond cell both distally and proximally are edged with pink. Black spots as on upper side with two small ones near base of costa.

H.-w. orange at base, followed by sage green as far as end of cell. Beyond this pink, outwardly edged with orange and enclosed by a broad black marginal border bearing quadrate internervular sage green spots. Large confluent black spots as follows:—One in 8, two in 7, the second followed by a series of three lying in a curved band in 6, 5, and 4. A long patch on discocellulars, and a spot at base of 3 and of 2 the latter followed by large contiguous spots in 1c and 1b and a small spot in 1a. Two spots in cell the second followed by contiguous spots in 1c and 1b. A spot at base of 1c and a subbasal in 1a.

Head and thorax black with a few pale dots, proximal half of abdomen black, remainder orange.

♀. Expanse 80 mm. Spotted and marked as in ♂ but all the red areas replaced by dusky white and the dark areas rather brown black. Underside like that of ♂ but generally paler and duller, and all the pink areas replaced by white.

Abdomen black above with large yellowish white lateral spots.

This remarkable form occurs on Princes I., W. Africa. Some old examples bear labels indicating that they were taken on the mainland, but if the form ever did occur there it does not appear to do so now. Aurivillius (Ann. Mus. Genov., *l. c.*) records sixteen ♂♂ and eight ♀♀ taken on Princes I., Jan. to Aug. 1901. The Oxford collection possesses a ♀ kindly presented by Prof. Aurivillius. The ♂ I have figured is in the general collection in the Berlin Museum, and is labelled Senegal.

The larva and pupa of *A. egina* have been described by Aurivillius *l. c.*, and his short description agrees with the specimen figured on Plate VI. From an example before me the larva may be thus more fully described.

Length about 34 mm. Dorsal area pale yellow the junctions of the segments marked by fine black lines, in front of each of which the yellow is deepened to an orange tint. The rows of spines arise from rather broad black transverse lines. The yellow area is bordered by a rather broad dark brown line beneath which is a lateral line of pale yellow broken up into spots followed by a brown sublateral line. Head black with a bifurcated pale line. True legs black. Prolegs dark brown segmented with yellowish. Spines rather stout, black, with fine black bristles. The bases of spines slaty blue.

The typical *A. egina* extends from Senegal across Africa to Rhodesia, Nyassaland, and Uganda, whilst the subspecies *areca* occurs in Nyassaland, German E. Africa, and British E. Africa. It is a well-defined species easily distinguished from the forms to which it bears a superficial resemblance. A series in the Oxford collection, taken at Chirinda includes examples somewhat intermediate between *egina* and *areca*. The ♂ armature is quite distinct, and shows no close affinity with that of any other species.

GROUP VII.

37. ACRAEA CEPHEUS. Pl. VIII, f. 12.

Acraea cepheus, Linnaeus, Syst. Nat., (*Pap.*) ed. 10, p. 487 (1758) ; Mus. Lud. Ulr., p. 252 (1764) ; Clerck, Icones. Ins., 2, pl. 43, f. 4 (1764) ; Mabille, Hist. Nat. Mad., Lep. (*A.*) 1, p. 98, pl. 12, f. 1, 2 (1885-7) ; Butler, Proc. Zool. Soc., p. 66 (1888) ; Aurivillius, Rhop. Aeth., p. 93 (1898) ; Butler, Proc. Zool. Soc., p. 26 (1901).

♀ = *baumanni*, Rogenhofer, Ann. Mus. Wien., 4, p. 551, pl. 23, f. 2 (1889).

CONGO (Kassai, Bumba, Aruwimi, Bopoto, Stanley Pool, Lokolele); GOLD COAST; ANGOLA (Loanda, Cugho R.); GABOON (Chinchoxo, Fernan Vaz., Lake Azingo); SUDÂN (Giraffe R., Bahr el Ghazal).

f. *abdera*, Hewitson, Exot. Butt. (*Acraea*), pl. 1, f. 1, 2 (1852); Aurivillius (♀), Ent. Tidskr., 12, p. 200 (1891).

= *cephens*, Staudinger, Exot. Schmett., 1, p. 85 (1885).

♀ = *pheusaca*, Suffert, Iris, p. 25 (1904).

NIGERIA; FERNANDO PO; CAMEROON; GABOON; CONGO STATE (Sassa).

f. *eginopsis*, Aurivillius, Rhop. Aeth., p. 93 (1898).

TOGOLAND.

♀ f. *sucepha*, Suffert, Iris., p. 25 (1904).

Loc. as typical form.

♀ f. *nigrescens*, f. n.

Loc. as typical forms.

A. cepheus cepheus.

♂. Expanse 52–60 mm. Wings vermillion red. Costa, apex, and hind margin black. Black spots as follows:—One in area 11, about middle of length of cell. In cell a subbasal spot adjacent to subcostal, a large transverse median spot the whole width of cell, and a spot on upper and middle discocellulars. Just beyond end of cell a confluent band of quadrate spots, the lowest (in 3) with its long axis transverse. A submarginal spot in 2 and 1b, the former often confluent with marginal black. A large spot in 2 touching median and nervule 2. Below this in 1b and rather nearer margin a large spot. In 1b midway between base and origin of 2, a comma-shaped spot. A black linear basal mark in cell and 1b. Hind margin narrowly black. H.-w. with black basal suffusion in cell, 1c, 1b, and 1a. Black hind-marginal border 2 mm. wide, edentate on the nervules. Black spots as follows:—A zigzag discal row of nine, one in each internervular space. In area 7 a subbasal and a median spot. A small spot on the upper discocellular, two in the cell, and one in 1c, 1b, and 1a, these obscured by the basal suffusion.

Underside. F.-w. Rose pink, yellowish on the costa and immediately beyond the discal spots. Apex and hind margin dark ochreous with narrow brown internervular rays and broadly black nervules. Usually a minute black subbasal spot

on costa. H.-w. pinkish ochreous, basal portion of areas 7, 6, 5, distal end of cell, and median part of 1c, 1b, and 1a rose pink. Black hind margin deeply edentate on nervules, edged inwardly with deep orange, and bearing seven ochreous internervular spots. Black spots as on upperside and three additional basal spots visible in 8, at base of cell, and in 1c. Head black with orange tufts on collar. Thorax black with two whitish dorsal lines, orange lateral spots, and ochreous spots beneath, basal half of abdomen black with lateral orange spots, remainder orange. Claws unequal.

♀. Expanse 56-60 mm. Sepia black. F.-w. spots as in ♂ (spots sometimes smaller). An oblique white subapical band in 6, 5, 4, and 3. H.-w. usually without basal suffusion. Black hind-marginal border with internervular quadrate spots of the somewhat paler ground-colour.

Underside f.-w. greyish mauve; costa, apex, and hind margin sage green with black nervules and rays. Spots often smaller, those near base may be very minute. H.-w. sage green spotted as in ♂. Head and thorax black with dorsal and lateral greenish white spots. Abdomen black above, pale ochreous beneath, with lateral white and sublateral pale ochreous spots.

A. cepheus f. *abdera*, Hew.

Differs from the typical form in the absence of the red colour from the space between the end of cell and discal row of spots, and there is sometimes a trace of a whitish subapical bar.

A. cepheus f. *eginopsis*, Auriv.

The red in f.-w. forms a median hind-marginal patch, giving an appearance similar to that in *A. egina*.

A. cepheus ♀ f. *pheusaca*, Suffert (= *abdera* ♀, Auriv.).

The ground-colour of the wings is brownish red, the spots are obsolescent, the costa, apex, and hind margin reddish brown, and the subapical bar dark ochreous. The h.-w. spots small and often obsolescent. The marginal border bears slightly paler internervular spots. Underside f.-w. as above but paler; costa, apex, and hind margin brownish ochreous. H.-w. pinkish brown, spots as in typical examples.

Aurivillius associates this form of ♀ more particularly with the *abdera* form of the ♂, but I do not think it is the only ♀ form occurring with the *abdera* ♂.

A. cepheus ♀ f. *sucepha*, Suffert.

In this form the ground-colour is nearly as bright a red as in TRANS. ENT. SOC. LOND. 1912.—PART I. (JULY) 1

the ♂, the subapical band of the f.-w. is white, slightly suffused proximally, with pale ochre yellow. The underside is typical.

A. cepheus ♀ f. *nigrescens*, f. nov.

This form represented in the Tring Museum has all the wings sepia, without the white subapical bar. In the h.-w. the external portion of the discal area is paler and is deeply invaded on the nervules by the black of the marginal border, and between them by the dark ground-colour. The spots are as in the typical ♂. On the underside the f.-w. is deep mauve, the costa, apex, and hind margin sage green. H.-w. pale sage green. Spots and markings as in typical examples. (Described from a Sierra Leone specimen.)

A series of ♀ examples shows various intermediates between these different forms, often from the same locality. Thus specimens from Fernan Vas R. (French Congo) show all gradations from the typical ♀ to the *pheusaca* form, a ♂ from the same locality being of the usual coloration. I do not feel justified therefore in assigning any particular ♀ to a distinctive form of ♂. One is tempted to regard these different forms of ♀ as to some extent seasonal, but the series here mentioned were all taken at the same time, viz. in the month of January, which seems to preclude this possibility.

38. *ACRAEA PETRAEA*. Pl. VIII, f. 13. Pl. XVI, f. 4.

Acraea petraea, Boisduval, Voy. Deleg., 2, p. 589 (1847); Wallengren, Rhop. Caffr., p. 21 (1857); Hoppfer, Peters Reise. Ins., p. 373, pl. 34, f. 1-4 (1862); Trimen, Rhop. Af., Austr. p. 100 (1862); Oberthür, Etud. d'Ent., 3, p. 26, pl. 2, f. 4 (1878); Staudinger, Exot. Schmett., 1, p. 85, pl. 33 (1885); Trimen, S. Af. Butt., 1, p. 144 (1887); (metam.), l. c., p. 145; Butler, Proc. Zool. Soc., p. 192 (1898); Aurivillius, Rhop. Aeth., p. 95 (1898); Fawcett (metam.), Trans. Zool. Soc., p. 294, pl. 46, f. 1, 2, 3 (1901); Marshall, Trans. Ent. Soc., p. 325 (1902); Dixey & Longstaff, Trans. Ent. Soc., p. 318, 328 (1907).

♀ (dry season) = *petrina*, Suffert, Iris, p. 25 (1904).

NATAL; TRANSVAAL; E. GRIQUALAND; GERMAN E. AFRICA (Dar-es-Salaam, Kilimandjaro, Tanganyika, Mikandani).

f. *taborana*, Suffert, Iris, p. 26 (1904).

Localities as above.

A. petraea petraea.

♂. Expanse 50–60 mm. Wings bright rosy red, rather darker at apex of f.-w. and in submarginal part of h.-w. F.-w. base suffused with black, slightly in cell and more widely in 1a and 1b. Costa and hind margin narrowly black. Nervures and nervules strongly marked and broadly black where joining hind margin. Black spots as follows :—In area 11 near middle of cell an oblique spot joining costal and subcostal. In cell a subbasal spot adjacent to subcostal, followed by a second larger subtriangular spot touching subcostal and median, a double spot on upper and middle discocellulars. Just beyond cell a band of confluent spots from nervule 11 to 3, narrow at first, widening suddenly in area 6 so as to join discocellular spot, narrower in 5 and 4, but occupying the entire basal half of area 3, and sometimes curving round on nervule 3 so as almost to join hind margin. In areas 2 and 1b two submarginal spots, and in 2 a large spot touching median and nervule 2; beneath this in 1b and nearer margin a large reniform spot. Inner margin narrowly black.

H.-w. Base suffused with black, rather broadly so in 1b, 1c, and lower half of cell. Hind margin with black border 1.5 mm. wide. Nervules strongly marked. Black spots as follows :—In area 7 a small submarginal spot. A sinuate discal row of eight internervular spots (no spot in 3), a subbasal spot in 7, two spots in cell, one on m.d.c., a basal and a subbasal in 1c, a subbasal in 1b, and 1a.

Underside. F.-w. dark salmon pink, apex greyish pink with deep orange internervular rays. A small black spot on costa near base. Spots near base are wanting and the remainder are of different shape and smaller size, the outline of the upperside spots showing through. H.-w. pale salmon pink with some reddish internervular marks at base, and reddish internervular rays. Hind margin bearing seven yellowish white spots. Black spots as above with an additional spot visible in 8, near precostal. Head black with a white central line, and two small lateral spots, red lateral tufts on collar. Thorax black with two faint dorsal white lines. Basal half of abdomen black with orange lateral spots, remainder orange. Claws unequal.

The foregoing description applies to an average wet season ♂. The black markings of this species are very variable in shape and extent, and it is almost impossible to make a description which will satisfactorily cover the range of individual variation. Trimen describes a ♂ aberration (*l. c.*, p. 146) with f.-w. entirely dull black.

♀. Expanse 60–64 mm. Wet season form. F.-w. sepia rather darker at costa, apex, and hind margin, with black spots as in ♂ but somewhat less distinctly outlined. A broad white subapical patch from costa to nervule 3. H.-w. pale sepia marked and spotted as in ♂.

Underside. F.-w. Basal and discal area brownish grey; costa, apex, and hind margin greenish grey with black nervules and dark ochreous rays. Subapical patch greenish white, spots as in ♂. H.-w. greenish grey with black spots as in ♂. Near inner edge of marginal border a row of small greyish ochreous streaks. Abdomen black above with large white lateral spots. Yellowish beneath.

Dry season form. Closely resembles ♂ but ground-colour duller red, white subapical patch as in wet season form, and apex black with reddish internervular rays. Underside of h.-w. pale dull ochreous with orange ochreous spots at inner edge of hind-marginal border. Discal spot in area 3 may be present though small.

A. petraea f. *taborana*, Suff.

The ♂ described under this name by Suffert has the median cell spot joined to the basal black, and the discal black band of spots is of less extent than usual. In so variable a species the name is hardly worth preserving.

In the ♀ ascribed to this particular variation of the ♂, but with which it has no special connection, the ground-colour is the same as that of the ♂ and the subapical patch is dull orange ochreous. The varietal name *taborana* may perhaps be preserved for this form. Both the above occur in a series taken by Marshall in Natal, and now in the Hope Department.

Fawcett's description (*l. c.*) of the larva and pupa is as follows:—

Larva.—“Ground-colour pale golden brown, with dorsal and lateral black lines, and a black transverse line on each segment bearing two largish white spots and six long branched black spines, those on 3rd, 4th, and 5th segments being longer than the remainder. Head large proportionately to body, black with a white bifid mark on front. Thoracic legs and claspers yellowish. The young larvae reared were all blackish in colour and fed in companies on *Oncoba kraussiana* (Planch).

“Pupa appears to be dichromatic, some being pale brown and others ferruginous; in both forms the fine black lines and

spots peculiar to *Acraea* pupae are much reduced. The pupal stage lasted fifteen days in January."

Trimen says the young larvae feed in companies and drop to the ground on a silken thread when alarmed.

The species is undoubtedly closely allied to *A. cepheus* of the west.

39. *ACRAEA GUILLEMEI*. Pl. IX, f. 2.

Acraea guillemei, Oberthür, Etud. d'Ent., 17, p. 19, pl. 1, f. 1 (1893); Aurivillius, Rhop. Aeth., p. 97 (1898).

♂ = *A. acutipennis*, Lathy, Trans. Ent. Soc., p. 3, pl. 1, f. 3 (1906).

"LAKE TANGANYIKA"; CONGO STATE (Upper Lufupa R.); ANGOLA (Bailundu).

♂. Expanse 46–50 mm. F.-w. somewhat elongated. Bright red with a blackish apical patch 4–6 mm. wide, more or less continued as a narrow blackish marginal border. A little black at base and black spots as follows:—One in cell at or beyond origin of nervule 2, one on end of cell, a discal band of five spots, the first small in 10, the second larger in 6 and rather more distal, the third below it in 5, the fourth in 4, more distal and with its long axis pointing downwards and outwards, the fifth below it in 3 but with its long axis pointing downwards and inwards. A large spot near base of 2 and beneath it but nearer margin a spot in 1b. Sometimes a subbasal spot in same area.

H.-w. bright red with some black at base especially in 1c. A narrow black hind-marginal border with a somewhat undulating inner edge and bearing more or less developed internervular spots of the ground-colour. Black spots as on underside.

Underside. F.-w. as above but duller, apical patch merely dusky. Sometimes two black spots on costa near base though one or both may be absent.

H.-w. much as above but duller and inclined to greenish grey at base and along nervules. Internervular marginal spots paler and better developed. Black spots as follows:—A little irregular black at base, a spot in 8 near precostal. An outer band of large black spots, the first in 7 well beyond origin of nervule 7, second in 6 more distal, and beneath it but still more distal a spot in 5; one near base of area 4 and beneath it but much nearer margin a spot in 3, one near base of area 2 and immediately beneath it a spot in 1c, followed by one in 1b slightly nearer base. A subbasal in 7, two in cell, and one on discocellular at

base of 5, a subbasal in 1c, beneath it a spot in 1b and a dot in 1a, also a subbasal in the latter area.

Head black with a reddish tuft between eyes and two on collar. Thorax black above. Basal half of abdomen black above with yellowish lateral spots, remainder orange. Claws unequal.

♀. Like ♂ but with much more rounded f.-w. and somewhat less apical black.

One ♂ of this species from Angola in the collection of Herr J. N. Ertl has very little black at apex of f.-w., but the nervule ends are heavily scaled with black. The discal spot in h.-w. area 5 is represented by a mere dot, and is absent in one wing on the upperside.

I have seen only very few examples of this rare species, though in many collections a form of *A. nohara* is labelled *guillemei*. I was much struck with the rather peculiar arrangement of the h.-w. spots in Oberthür's *guillemei*, and observed that this arrangement corresponded to that in Lathy's *acutipennis*. When examining the Staudinger collection I found a single example agreeing with Oberthür's figure, but it was a ♀, and Oberthür's specimen is described as a ♂. I therefore wrote to that author requesting him to again examine the type, and he informs me that he thinks it is a ♀. If this be so I cannot doubt that *acutipennis* is its male, and I feel sure that the acquisition of further material will confirm this conclusion.

Whether the substitution, in the Angola example, of black nervules for the f.-w. apical patch as described above be peculiar to that region I have not sufficient material to decide. Staudinger's specimen is merely labelled W. Africa, and so affords no assistance.

The ♂ armature is quite distinctive.

40. *ACRAEA BÜTTNERI*. Pl. IX, f. 1.

Acraea büttneri, Rogenhofer, Ann. Mus. Wien., 4, p. 553, pl. 23, f. 8 (1889); Verh. z. b. Ges. Wien, 42, p. 575, f. 3 (1892); Aurivillius, Rhop. Aeth., p. 95 (1898); Neave, Proc. Zool. Soc., p. 14 (1910).

= *felina*, Trimen, Proc. Zool. Soc., p. 65, pl. 8, f. 5, 6 (1891).

CONGO STATE (Abumonbasi, Bopoto, Stanley Falls, Luebo R., Kassai R., Popokabaka, Uboto, Lufupa R., Lubudi R.); N.W. RHODESIA (Kansanshi); ANGOLA (Mkweta, Muene, Indali); DAMARALAND (Humbe, Cunene R., Omrora, Otiembora, Okavango R.).

♂. Expanse about 50 mm. Wings bright scarlet. (In some examples deep orange, but whether this difference is due to fading or to seasonal dimorphism I am unable to decide, the examples before me not being dated.) F.-w. Costa yellowish. Apex moderately suffused with black and the nervules heavily marked with the same colour. Hind margin narrowly black. Black spots as follows:—In area 11 near middle of length of cell a small spot. Below this in cell an oblique transverse spot and one on upper and middle discocellulars. Just beyond end of cell an oblique transverse band of spots from costa to nervule 4. In area 3 a broadly crescentic spot near middle of its length and sometimes a small submarginal. In area 2 a submarginal subtriangular spot and a reniform spot at basal end touching median and nervule 2. In area 1b a submarginal, close behind it a discal, and touching the median a subbasal spot; also a small black basal streak. In area 1a near middle a small black streak, also a slight black basal suffusion. H.-w. with a slight black basal suffusion and a narrow (about 1.2 mm.) hind-marginal band. Inner margin yellowish. Black spots as follows:—A discal sinuous row of eight the fourth (in 4) usually confluent with a minute spot on the discocellular (this latter not always present). The spot in 2 touching median and nervule 2. In area 7 a subbasal spot. Two spots in cell the distal one large and transverse. A subbasal and a basal spot in 1c, and one or two confluent and rather obscurely defined spots in 1b and 1a.

Underside. F.-w. rosy red, costa, apex, and hind margin ochreous. Hind margin and nervules narrowly black, reddish internervular marks, black spots as on upperside. H.-w. warm ochreous, darker in the internervular spaces and with some reddish marks near base. Hind margin with a narrow greenish grey border about 1.2 mm. wide, outwardly and inwardly defined by a very narrow black edge, and divided by the black nervules. Spots as above, an additional one being visible in area 8 near precostal, and a basal spot in 9, and 1c. The discal spots in 1a and 1b sometimes confluent.

Head and thorax black with a few yellowish spots, and red or orange lateral tufts on collar. Basal half of abdomen black with orange lateral spots. Remainder orange. Claws unequal.

♀. About same size as ♂ (one dwarfed example before me only 36 mm.). Ground-colour rather less brilliant. Spots similar. H.-w. margin with pale internervular spots of ground-colour. Abdomen all black above with large whitish lateral spots.

A. büttneri shows considerable variability in the size of the spots, their position also is not quite constant. In some specimens the margin of the h.-w. bears pale internervular spots of the ground-colour. On the under-side, the h.-w. may be uniformly ochreous, the marginal border being only a little paler than the rest. In other examples the h.-w. hind-marginal border is pale greyish white, the narrow black outer edge being very indistinct.

The species is rare in collections, and I have been unable to gain access to sufficient numbers to decide whether it exhibits seasonal dimorphism. Though probably allied to *A. petraea* and *A. cepheus* the male armature is quite distinct.

41. *ACRAEA VIOLARUM*. Pl. IX, f. 3. Pl. XV, f. 20.

Acraea violarum, Boisduval, Voy. Deleg., 2, p. 591 (1847); Wallengren, Rhop. Caffr., p. 21 (1857); Trimen, Rhop. Af. Austr., p. 95 (1862); Standinger, Exot. Schmett., 1, p. 84 (1885); Trimen, S. Af. Butt., 1, p. 141, pl. 3, f. 4 (1887); Butler, Proc. Zool. Soc., p. 191 (1898); Aurivillius, Rhop. Aeth., p. 95 (1898).

= *nataliensis*, Angas, Kaff. Ill., pl. 30, f. 6 (1849).

ANGOLA (Bihé, Calweha R., Caconda, Cubal R., Cambo, Caquenje, Benguella); CAPE COLONY; NATAL; TRANSVAAL; MASHONALAND.

♂. Expanse 50–56 mm. Wings dull brick red (probably brighter in fresh specimens) spotted with black. F.-w. with a narrow apical black tip extending very narrowly for a short distance along costa and along whole length of hind margin to hind angle. Spots as follows:—On costa near middle of length of cell a linear spot. In area 11 near end of cell a small oblique quadrate spot, and immediately below this an elongate transverse spot extending right across cell. A small spot on the upper, middle and partly on lower discocellulars. Beyond cell a discal outwardly convex (in some species nearly straight) bar of confluent spots extending from costa to nervule 4. Beneath this in 3 and slightly nearer margin a crescentic outwardly convex spot. Three rounded subapical spots in 6, 5, and 4 lying almost in a straight line (occasionally a small additional spot in 8), followed by a submarginal spot in 3, 2, and 1b, the last being doubled. In area 2 a reniform spot touching median and nervule 2. Below this and nearer margin a large, often gemminate spot in area 1b, and in the same area a large transverse spot nearer base and touching median and nervule 1. In

area 1a slightly beyond middle a small transverse spot. Small black linear marks in cell, 1b, and 1a.

H.-w. with black basal suffusion, slight in 7, widening in cell towards median, extending to middle of wing in 1c, and tapering off to base of 1a. Hind-marginal black border 2 mm. wide rather strongly arched on inner edge between nervules and bearing seven pale spots varying from red to yellowish. Black spots as on underside, except in 1a and 1b where they merely show through from beneath.

Underside. Wings as on upperside but rather paler and duller, f.-w. with apical region slightly yellower than the remainder. Spots as on upperside. The black at apex bears three small greyish white spots.

H.-w. On the marginal border the internervular spots are large, rounded, and violet grey, centred with yellow, the black portion being reduced to a series of rings. Black spots as follows:—A very irregular discal row of eight, first in 7 slightly beyond middle, second and third, in 6 and 5, midway between the latter and marginal border, contiguous, and lying at right angles to costa; fourth, in 4, touching nervule 5 and l.d.c.; fifth, in 3, crescentic nearly midway between end of cell and marginal border; sixth in 2 touching median and 2, seventh in 1c rather nearer margin than the sixth; eighth in 1b at same level. In addition to these the following basal and subbasal spots. In area 7 a subbasal spot, its long axis pointing towards inner margin; two in cell, the second elongate and transverse; a basal and a transverse subbasal in 1c, 1a, and 1b, the latter also extending into 1a. A basal spot in 9, and a small spot in 8 a short distance beyond precostal. Fringes of both wings white.

Head dark red brown, two reddish lateral tufts on collar, thorax black brown with lateral tufts of red. Abdomen black above, yellowish beneath with lateral orange spots. Claws unequal.

♀. About the same size as ♂, and resembling it in markings, but ground-colour duller, and f.-w. more rounded. Abdomen black with white lateral spots. Underside of h.-w. sometimes ochreous with reddish internervular patches. The ground-colour varies from slightly paler than the ♂ through dull ochreous, smoky ochreous, to violaceous sepia. An example of the latter coloration in the National Collection has a median white suffusion in the h.-w. The h.-w. margin if spotted at all is marked with white.

Unfortunately very few of the examples which I have been able to examine are dated, but the sepia coloured ♀♀ are probably wet season examples.

The species is not common in collections, and Trimen describes it as nowhere abundant.

42. *ACRAEA ASEMA*. Pl. IX, f. 4. Pl. XV, f. 19.

Acraea asema, Hewitson, Ent. Mo. Mag., xiv, p. 52 (1877); Trimen, Proc. Zool. Soc., p. 24, pl. 4, f. 3, 3a (1894); Marshall, Trans. Ent. Soc., p. 555 (1896); Aurivillius, Rhop. Aeth., p. 95 (1898); Neave, Proc. Zool. Soc., p. 14 (1910).

= *empusa*, Butler, Proc. Zool. Soc., p. 656 (1893).

f. *gracilis*, Wichgraf (*violarum* g.), Berl. Ent. Zeit., p. 243, pl. 6, f. 7, 8 (1908).

ANGOLA (Bihé, Bailundu); MANICALAND; MASHONALAND; NYASSALAND (Blantyre).

A. asema asema.

♂. Expanse 36–50 mm. Wings brick red with a rosy tinge, to ochreous or greyish ochreous, with black spots. F.-w. distal portion of costa very narrowly black, apex with a small black patch, continued along hind margin as a very narrow black marginal border. Black spots extremely variable. When all present arranged as follows:—In area 11 near end of cell one spot and beneath this an elongate transverse spot in cell. A small linear mark on upper portion of discocellulars. Shortly beyond end of cell an oblique transverse band of spots from close to costa to nervule 4, this band may be straight, irregular, or outwardly convex; beneath it and slightly more distally placed a spot in 3. Beyond these, in the subapical area, a row of three spots in 6, 5, and 4. These may be in a straight line, or outwardly convex, or absent altogether. Beneath them a submarginal row of three spots in 3, 2, and 1b. A spot near base of area 2 close to median, and two additional spots in 1b, one near submarginal spot, the other near base. Black basal linear marks in cell, 1b and 1a, absent in typical dry season examples. H.-w. with a narrow black border arched on inner edge as in *violarum*. This border is extremely variable and may be almost entirely black, or set with internervular white spots, or the internervular portions may be nearly all of the ground-colour leaving only a series of black arches. Black spots as on underside, but usually smaller and some of them frequently only showing through from beneath; basal suffusion of black in wet season specimens, often replaced by reddish in dry season examples.

Underside. F.-w. Wet season specimens usually show the black apex with three small yellowish white spots. Dry season examples have the apex pale ochreous, and the ends of the

nervules black. Ground-colour as above but duller, spots as above. H.-w. Ground-colour as above, often with paler discal markings and the basal and inner marginal areas suffused with pink. The hind-marginal border is pale ochreous, and divided into spots by a series of narrow black arches. Black spots rather variable but usually more distinct than on upperside and arranged as follows. An irregular discal row of eight, the first in area 7 near middle, the second and third in 6 and 5, more distally placed, contiguous, and in a line perpendicular to costa, the fourth in 4 close to cell, the fifth in 3 some distance beyond cell, the sixth in 2 touching median and nervule 2, seventh and eighth rather more distal, contiguous, and lying at right angles to hind margin. A basal mark in 9, a small spot in 8 some distance beyond precostal, a transverse subbasal spot in 7, two spots in cell, a basal and subbasal in 1c, close to latter a spot in 1b, and nearer base a small spot in 1a. In dry season specimens several of these spots may be absent and generally all are smaller. Head black brown with reddish tufts on collar. Thorax black with lateral reddish spots and sometimes two anterior dorsal spots. Basal part of abdomen black with orange lateral spots, remainder orange. Fringes white. Claws unequal.

♀. Expanse 44-52 mm. F.-w. more rounded. Usually duller than ♂, some examples being greyish ochreous. One specimen before me, taken by Neave in Angoniland is dull ochreous and the apical and hind-marginal black is unusually broad and inwardly suffused. The h.-w. marginal border is about 3 mm. broad and bears ochreous internervular spots of medium size.

A. asema, f. *gracilis*, Wichgr.

I have examined the type of this form and find that the ♂ has the h.-w. margin very narrow and all black, the same feature in the ♀ being a little broader and spotted with white. Beneath, both sexes have the spots on this border white instead of ochreous. (Mashonaland.)

With regard to the seasonal forms of this species Marshall states (Trans. Ent. Soc., p. 555, 1896) that "the bright-coloured strongly spotted summer" (= wet season) "form is replaced in winter by a duller form in which the black markings are reduced, the two upper spots in subapical row usually being obsolete."

There is undoubtedly a certain amount of seasonal dimorphism, but from an examination of a large number of examples I am of opinion that the description bright-

coloured for the wet season forms is apt to be a little misleading. The dry season forms are certainly less spotted than the wet, also the actual tone of colour is usually paler, but many of them have a rather bright pink suffusion, whilst the wet season forms though more *heavily* coloured are generally of a less rosy tint. A fine series taken by Neave in Nyassaland, mostly at an elevation of about 4,000 ft., contains examples taken in March, and also in June and July. Nearly all the former are of a rather dusky ground-colour whilst the latter have a rosy pink suffusion.

Though closely allied to *A. violarum* I consider *asema* to be a distinct species, both ♂ and ♀ genital armatures showing marked differences. Moreover I have seen no obvious intermediates.

43. *ACRAEA OMRORA*. Pl. IX, f. 5. Pl. XV, f. 21.

Acraea omrora, Trimen, Proc. Zool. Soc., p. 24, note (1894).

= *asema*, Trimen, Proc. Zool. Soc., p. 68, pl. 8, f. 9, 10, 10a (1891); Aurivillius, Rhop. Aeth., p. 95 (1898).

S. ANGOLA; DAMARALAND (Ovampo R.).

A. omrora umbrata, subsp.

= *violarum umbrata*, Wichgraf, Berl. Ent. Zeit., p. 242, pl. 6, f. 5, 6 (1908).

= *violarum omrora*, Neave, Proc. Zool. Soc., p. 14 (1910).

N.E. RHODESIA; KATANGA.

A. omrora omrora.

♂. Expanse 40–60 mm. F.-w. dark ochreous with a slight basal black suffusion and a very little black at apex continued as a fine marginal line to hind angle. Black spots as follows:—One large transverse spot in cell, and a spot on discocellulars. Beyond cell a transverse row of three spots in 6, 5, and 4, of which the second is slightly more distally placed. Beneath them and still more distal a spot in 3. A submarginal series of five small spots, the first in 5, the second in 4 rather more distal, and the third in 3 still nearer margin, the fourth and fifth in 2 and 1b are at the same distance from margin as the third, and that in 1b is doubled. A spot near base of area 2, beneath it but rather nearer margin a spot in 1b, and a double spot near base of same area.

H.-w. with ground-colour as in f.-w. and having a black hind-marginal border about 3 mm. wide which tapers to a point at anal angle. A slight black basal suffusion and some of the black spots of underside reproduced though most are obsolete.

Underside. F.-w. resembles upperside but paler and duller. H.-w. pale dull ochreous, the marginal border formed of somewhat pointed black internervular arches enclosing grey spots. Along the inner edge of this border a greyish suffusion. Black spots very small, as follows :—One in 7 about middle, one in 6 much nearer margin, beneath it a dot in 5, a spot near base of 4, and one about middle of area 2. At about the same level a double spot in 1c and one in 1b. A little black at bases of nervures, a dot in 8, two in cell, and a subbasal in 1c, and 1a.

Head and thorax black with yellowish marks, abdomen black at base, remainder whitish. Claws unequal.

♀. Expanse 50–56 mm. Resembles ♂ but ground-colour rather more dusky. The inner edge of h.-w. marginal black markedly sinuous. On underside the grey suffusion is wanting from inner edge of marginal border, and the abdomen is whiter than in the ♂.

A. omrora umbrata.

♂. Expanse 46–60 mm. Extreme wet season form. Wings brick red. Costa and hind margin narrowly black. An apical black patch 3 mm. wide at broadest part. A basal black suffusion which may be evenly distributed over basal area as far as middle of cell or may be radiate from base. Black spots as follows :—A small costal spot in area 11 at a point opposite origin of nervule 2. Just beyond this in cell a large transverse spot; a small spot on upper and middle discocellulars. Beyond end of cell in 10, 6, 5, 4, an oblique transverse row of four spots which may be straight, or irregular. Three submarginal spots in 5, 4, and 3, the last preceded by a subtriangular spot. In area 2 a submarginal and a basal spot; in area 1b a submarginal spot with another immediately preceding it (both these may be doubled). A subbasal spot in 1b more or less coalescent with basal suffusion. In area 1a a small spot about 4 mm. from hind angle.

H.-w. A black basal suffusion extending to about middle of cell. A black hind-marginal border about 3.5 mm. wide the inner outline of which may be smoothly rounded, or the border may be somewhat widened at nervules 2 and 3. In some examples this border is much wider beneath and shows through to the upperside as a grey submarginal band. In most examples a submarginal row of slightly paler internervular spots. Black spots less distinct than on underside, some only showing through.

Underside. F.-w. paler and duller than on upperside and the spots for the most part smaller, and, owing to the upperside spots showing through, appearing to be ringed with grey. At apex a small black patch containing three greenish ochreous spots in 8, 7, and 6. H.-w. the same colour as f.-w. The basal black much reduced, the marginal border sometimes wider than on upperside, and bearing seven usually well-rounded greenish ochreous internervular spots, that in 1c doubled. Black spots as follows:—A discal row of eight, the first in 7 beyond middle, the second rather nearer margin, and the third either immediately beneath it or very slightly nearer base, the fourth in 4 close to end of cell, the fifth in 3 about midway between end of cell and hind-marginal border, the sixth in 2 near median, the seventh in 1c rather nearer margin and doubled, the eighth in 1b nearer base. A minute dot in 8 a short distance beyond pre-costal, a subbasal spot in 7, one subbasal and one median in cell, a double subbasal spot in 1c, and a small subbasal in 1b and 1a. These are but slightly separated from the narrow black basal suffusion. Fringes black. Head and thorax black, a white spot on each eye, and one between. Two pairs of dorsal thoracic spots. Basal half of abdomen black with reddish lateral spots, remainder orange.

♀. Expanse 46-64 mm. Dull ochreous, with slight subapical reddish suffusion, spots and markings as in ♂ but less sharply defined. H.-w. hind marginal band rather broader and with a more suffused inner edge. Underside paler than above, spots and markings as above but many of those in f.-w. obsolescent, or only showing through from above. F.-w. apical, and h.-w. hind-marginal spots whitish, and the latter larger than in ♂. Abdomen black above with white lateral spots and yellowish beneath. The example here described was taken in the upper Luangwa Valley in the height of the rains.

Extreme dry season form ♂. Ground-colour pinkish ochreous. Basal black suffusion smaller and h.-w. marginal black narrower than in wet season form. The spots are all much smaller. Many of those in h.-w. are distinctly visible only on underside. The pale f.-w. apical and h.-w. hind marginal spots are smaller and whitish, distal end of abdomen dull ochreous.

♀ varies much in colour, some being smoky ochreous and others almost rosy pink especially in h.-w. Spots and markings much as in wet season ♀. H.-w. marginal black often narrower, and spots sometimes only showing through from underside. Black basal suffusion in both wings broad.

The forms above described occur in any long series of this species. I have called them wet and dry season forms since the extremes are mostly taken at those periods, but the variation in depth of colour and size of spots is very considerable and corresponds only approximately to the seasons.

In some cases the heavier black markings associated with the wet season may be well developed in the dry. A ♂ now before me, taken by Neave near Mporokoso in N.E. Rhodesia in July, is of a bright brick red, and though the h.-w. spots are smaller than in typical wet season forms, the black basal suffusion and h.-w. margin are unusually broad and heavy.

Trimen's figures of *omrora omrora* (l. c. as *asema*) correspond to dry season examples. The female is shown as having a white abdomen, but I do not observe this feature in any of the examples of *omrora umbrata*, though the lateral spots are usually white.

I have examined the specimens of Herr Wichgraf's *violarum umbrata* presented by him to the S. Kensington collection, and they do not differ from several of those taken by Neave in N.E. Rhodesia.

44. *ACRAEA LOFUA*. Pl. I, f. 8 (♂), f. 9 (♀). Pl. IX, ff. 12, 13.
Acræa lofua, Eltringham, Novit. Zool., xviii, p. 150 (1911).
 N.E. RHODESIA (Lofu R.).

♂. Expanse 46 mm. F.-w. dull pinkish ochreous with a very slight black basal suffusion. Apex black for a depth of 3 mm. Hind margin very narrowly black. Small black spots as follows:—One in cell over origin of nervule 2, one on discocellulars. Beyond cell a transverse row of four, that in 5 vertically beneath that in 6, the third linear, its lower end pointing outwards, the fourth beneath the outer end of the third. A spot close to base of area 2, and one in 1b' nearer margin. H.-w. more decidedly pink than f.-w., a black basal suffusion and a heavy black hind-marginal border, 5 mm. wide between nervules 2 and 3, and tapering off at hind angle. Some black basal and discal spots more easily observed beneath.

Underside paler than above. F.-w. as on upperside but spots less distinct; no basal, and very little apical black. H.-w. with faint pinkish basal internervular marks; very slight black basal suffusion. Hind margin black, narrower in middle than on upperside, its inner edge sharply dentate between the nervules, and having a submarginal row of seven triangular greyish white

spots, their bases towards the margin. Black spots as follows :— One in 8, two in 7, beyond the latter a spot in 6 followed by spots in 4, 2, 1c, and 1b, all of which lie in an almost straight line at right angles to inner margin. Two spots in cell, the second at origin of nervule 2. A basal and a subbasal in 1c and 1b, and a basal, a subbasal and a distal spot in 1a.

Head brown, thorax black, abdomen black above with yellowish lateral spots. Claws unequal.

♀. Slightly smaller. Pale dull ochreous. F.-w. with a brownish basal suffusion, apical black rather broader than in ♂, but all the spots absent except that on end of cell, and the second of the discal row (this very minute). H.-w. with faint dusky basal suffusion; spots absent or very faint. Hind-marginal black narrower (in middle) than in male.

Underside. F.-w. paler than on upperside, the two spots just visible but the apical black only faintly represented. H.-w. with only a faint trace of the discal spots; basal spots small and indistinct; hind-marginal black 2.5 mm. wide, not dentate, bearing greyish white submarginal spots, smaller and less distinct than in ♂. Abdomen black with whitish spots.

Of this interesting little species I have seen only the ♂ and ♀ above described. They were taken on the Lofu River in N.E. Rhodesia (4,000 ft.) by Neave. The species is closely allied to *A. omrora*, Trim., and indeed I should have regarded it as a form of that species, but for the peculiar structure of the male armature which bears a supplementary pair of processes between the harpes.

45. *ACRAEA NOHARA*. Pl. IX, f. 8. Pl. XVI, f. 19.

Acraea nohara, Boisduval, Voy. Deleg., 2, p. 590 (1847); Walengren, Rhop. Caffr., p. 21 (1857); Trimen, Rhop. Af. Austr., p. 96, pl. 3, f. 1 (1862); Staudinger, Exot. Schmett., 1, p. 84, pl. 33 (1885); Trimen, S. Af. Butt., 1, p. 142 (1887); Proc. Zool. Soc., p. 24 (1894); Aurivillius, Rhop. Aeth., p. 97 (1898); Fountaine (metam.), Trans. Ent. Soc., p. 60, pl. x, f. 14a, 14b (1911).

= *A. actiaca*, Hewitson, Exot. Butt. (*Acraea*) pl. 1, f. 3 (1852).

NATAL; TRANSVAAL; ZULULAND; PORTUGUESE E. AFRICA (Delagoa Bay, Beira).

A. nohara halali, subsp.

Marshall (*A. halali*), Trans. Ent. Soc., p. 555 (1896);

Aurivillius (var. *halali*), Rhop. Aeth., p. 97 (1898).

MASHONALAND.

A. nohara pseudatolmis, subsp. n.

S.E. RHODESIA; MAHAKATA R.

A. nohara punctellata, subsp. n.

NYASSALAND (Zomba); ANGONILAND; [? DELAGOA BAY].

A. nohara nohara.

♂. Expanse 50–60 mm. Wings bright red (in fresh examples) varying to pale dusky ochreous with black spots. The ground-colour varies in intensity, and the spots somewhat in size. F.-w. Costa very narrowly black continued as an apical and hind-marginal border about 1.5 mm. wide at apex and tapering to hind angle. Ends of nervules black, and a black suffusion at base, widest in 1a. Spots as follows:—A large rounded spot in cell just above origin of 2 and a still larger spot on discocellulars. Beyond cell an oblique row of four and sometimes five subquadrate spots, the first in 9 sometimes absent, the next three in 6, 5, and 4 quadrate and separated only by the nervules. The fifth in 3 somewhat elongated, with its long axis parallel to hind margin. The appearance of this band of spots varies considerably. Most commonly the second, third, and fourth, lie in a perfectly straight line at right angles to costa, but in some specimens they lie on an irregular outwardly convex curve. A rounded spot in 2 close to median, and a submarginal and a subbasal spot in 1b.

H.-w. with a black basal suffusion, and a black marginal border 1.5–2 mm. wide usually with a slight indication of paler internervular markings. Black spots as on underside but those near base obscured by basal black, and those in 1a and 1b often only faintly indicated.

Underside paler than above. F.-w. with a conspicuous spot at base of costa, apical area sometimes with orange internervular markings, the two spots in 1b often faintly indicated, otherwise spots and markings as on upperside.

H.-w. paler than above, area 8, 9, end of cell, and median portion of 1c, 1b, and 1a often pinkish. Space between basal spots in cell, 1c, 1b, and 1a ochreous. Hind margin ochreous divided into spots by the black ends of nervules and black internervular arches. A narrow black marginal line from apex to anal angle. Black spots as follows:—A discal row of nine. The first in 7 near middle, the second and third much nearer margin and placed one above the other (occasionally the third spot is small or absent), the fourth almost touches end of cell, the fifth may lie immediately beneath it, or may be in a line pointing to apex, the sixth touches median and 2, the seventh rather nearer

TRANS. ENT. SOC. LOND. 1912.—PART I. (JULY) K

margin, the eighth nearer base, and the ninth which is very small (in 1a) rather nearer base. A spot in 8 near precostal. A subbasal spot in 7, two spots in cell and one on discocellulars, a subbasal spot in 1c, 1b, and 1a, the middle one nearer to margin. Some irregular basal black where wing joins thorax. Fringes whitish and prominent. Head and thorax with reddish brown hairs. Abdomen black above for about two-thirds of length, with orange lateral spots. Remainder orange. Claws unequal.

♀. Expanse 50–60 mm. Ground-colour varies from slightly paler than the ♂ to ochreous or ochreous grey. Markings as in ♂. The variation in colour of the ♀ is probably seasonal, but I have not before me a sufficiently long series of dated specimens to be certain on this point.

A. nohara halali, subsp.

This subspecies may be distinguished from the typical form by its smaller size, by the marked reduction in the size of the spots, the invariable absence of the submarginal spot in f.-w. 1b, the extremely narrow black margin in h.-w., and the almost invariable absence of the third and fifth discal spots.

Marshall describes the wet season ♂ as bright brick red and the dry season ♂ as dull ochreous, a difference not easily observed in cabinet specimens owing to the rapidity with which the more brilliant colour fades. The ♀ is dull pale grey in wet season forms, and dull ochreous in the dry season.

The species is peculiar in having larger black spots in the dry than in the wet season.

When Marshall wrote of this form in 1896 (*l. c.*) he was of opinion that it was a distinct species. I cannot however find in the genitalia any difference from those of *nohara*. Colour and pattern are most untrustworthy evidences of specific distinction. From such considerations it might reasonably be argued that if *halali* be the same species as *nohara* then the "*nohara chambezi*" of Neave must also be the same, but the latter is certainly a distinct species though some examples so closely resemble *nohara halali*.

A. nohara pseudatolmis, subsp. n. Pl. I, f. 6 (♂).

There are three ♂ examples of this curious form in the Oxford collection. They were taken on the Mahakata R. in 1905 by Marshall. They are smaller than the *halali* form (about 41 mm. expanse). The submarginal spot in 1b of f.-w. is well developed. The *fourth* discal spot is linear and lies nearly at right angles to

the hind margin and makes a right angle with the fifth spot which extends right across area 3. In the h.-w. the black margin is extremely narrow as in *halali* but the discal row of spots are all present though small, and the second, third, fourth, and fifth are all run together in such a manner as to give the insect at first sight a marked resemblance to *A. atolmis*. This resemblance is even greater on the underside, the h.-w. having much pink suffusion, orange submarginal internervular marks, and the hind-marginal ochreous band is only very indistinctly divided into spots by the nervules.

I have not seen a female of this form.

A. nohara punctellata, subsp. n. Pl. V, f. 9 (♂).

In the British Museum there are several examples of a form of *nohara* labelled *guillemei*, Oberthür. The ♂♂ differ from typical *nohara* in being usually larger, and of a rosy red tint. The f.-w. is more rounded than in typical *nohara* and the discal spots lie in an irregular line much as in *A. chambezi*. The nervules are less markedly black in the apical area. On the underside of the h.-w. the marginal border is formed of large yellowish spots only faintly outlined in black. All the black spots are smaller than in typical *nohara*. Three ♀♀ now before me are dusky ochreous brown, and in one the inner edge of the h.-w. marginal black is much suffused.

Two ♂♂ and two ♀♀ from the Tring collection present much the same features, but the ♀♀ are only a little less rosy than the ♂♂.

Whilst many of the above examples present a certain amount of individual variation they all agree fairly closely with Oberthür's figure of *guillemei*, and I should have been inclined to assign them to that form but for one feature. The figure of *guillemei* shows the spot in area 3 of h.-w. midway between end of cell and inner edge of marginal border, whereas in the forms above described this spot is close to the end of the cell. Since we have two totally distinct species, *A. chambezi* and *A. mansya* existing side by side in the same district and differing outwardly only in the position of this particular spot, I do not think that the present form can be identical with *guillemei*.

The latter seems almost certainly the ♀ of the species since described by Lathy as *A. acutipennis*, with which it agrees very closely in the peculiar arrangement of the

h.-w. spots, and I have assigned *acutipennis* to Oberthür's species. The form of *nohara* here described appears in several collections over the label *guillemei*, but no specimen I have seen agrees with Oberthür's figure. The ♂ armature is identical with that of *nohara nohara*, but the ♀ plate is of a more rudimentary structure. In the Staudinger collection there are two ♂♂ and three ♀♀ of this form labelled *onerata*, and the locality is given as Delagoa Bay. Whether they came from Delagoa Bay or not they are certainly not *A. onerata*, which is a somewhat obscure western species of which only about three examples are known.

The early stages of *nohara nohara* are thus described by Miss Fountaine (*l. c.*).

"This larva feeds like several others of this same genus on *Wormskioldia longepedunculata*, a small, wayside flower, salmon-pink in colour, which grew abundantly in and about Macequece, a village in Portuguese E. Africa. The larva is most difficult to describe, longitudinally streaked with pale and dark ochreous-yellow, finely outlined with thin black lines, the spines are also black; they feed by preference on the flower itself of their food-plant, the salmon-pink colour of which is almost identical in tone with the salmon-pink colour of the freshly emerged butterflies. The pupa which is suspended, is very long and thin in shape, wing cases pale slaty grey, veined with black, and the abdomen cream colour with rows of ochreous-yellow dots, encircled in black."

According to Miss Fountaine's figure the ground-colour of the larva is deep yellow.

46. *ACRAEA CHAMBEZI*. Pl. IX, f. 10.

Acraea chambezi.

= *A. nohara chambezi*, Neave, Proc. Zool. Soc., p. 21, pl. 1, f. 5 (1910); Eltringham, Novit. Zool., xviii, p. 153 (1911).

N.E. RHODESIA (Chambezi Valley, near L. Young).

♂. Expanse 52-58 mm. Wings rosy red inclined to orange at apex. Costa very narrowly black from a short distance beyond base to apex. An apical and hind-marginal black border about 1 mm. wide at apex and gradually tapering to hind angle. A very slight black basal suffusion widest in 1b. Black spots as follows:—A linear transverse spot in cell above origin of nervule 2. A spot on discocellulars. Beyond cell a row of four (sometimes five) spots. The first in 11 (often absent). The next two in

a straight line at right angles to costa. The fourth obliquely placed and pointing towards margin. The fifth slightly elongated, its long axis making an obtuse angle with that of the fourth. A subreniform spot in 2 near median. The ends of nervures though finely marked in black are *distinctly less black* than in *nohara halali*. A submarginal and usually a subbasal spot in 1b.

H.-w. with a black basal suffusion widest in 1c. A hind-marginal black border about 1.5 mm. wide, with faint indications of paler internervular spots. Black spots as on underside, those near base obscured by the black suffusion, and those in 1b and 1c often faintly indicated.

Underside rose pink but more sparsely scaled than above. F.-w. as above but with a spot at base of costa, and an indication of pale spots on apical black in 6 and 7.

H.-w. with a black marginal border as above bearing distinct sublinear pale yellowish internervular spots. Discal row of seven spots. No spot in area 5. The spot in 3 is always much nearer to end of cell than to inner edge of marginal black. This spot seems to be *always a little further from end of cell* than in *nohara*. In one example it is absent. The three spots in 2, 1c, 1b, are usually in a straight line whereas the middle spot is generally nearer margin in *nohara*. This feature cannot be relied upon as a constant distinction since some specimens of *nohara* also have these spots similarly placed. There is a spot in 8 close to precostal, a subbasal in 7, two spots in cell, one in 1c, 1b, and 1a and some black about the base of the nervures.

Head black with red tufts between eyes and on collar. Thorax black with some reddish hairs. Abdomen, basal half black with orange lateral spots, remainder and beneath, orange. Claws unequal.

♀. Resembles the ♂ but the f.-w. are more orange coloured and the abdomen is dorsally black over whole length, and has dorso-lateral whitish spots.

When Neave described this form he was of the opinion that it was a subspecies of *A. nohara*, and in the absence of preparations of the male armature, such a conclusion would seem to be justified. The differences between the genitalia of *chambezi* and *nohara* are however of so marked a kind that the two must certainly be regarded as distinct species.

From typical *nohara*, *chambezi* differs in the smaller size of the spots; from *nohara halali* in the greater width

of the hind-marginal black, and from both these forms in the very faint development of black on the nervules of the f.-w. apical area.

47. *ACRAEA MANSYA*. Pl. I, ff. 13 (♂), 12 (♀). Pl. IX, f. 11.

Acraea mansya, Eltringham, Novit. Zool., xviii, p. 153 (1911).

= *A. nohara chambezi* (part), Neave, Proc. Zool. Soc., p. 21 (1910).

N.E. RHODESIA (Chambezi Valley, near L. Young).

♂. Expanse 40-50 mm. Wings rosy red with black spots and markings. To give a full description of this species would be merely to repeat that of *A. chambezi* with the exception that the spot in area 3 of h.-w. is nearly midway between end of cell and the inner edge of marginal black and thus lies either immediately below the spot in 4, or is more distally placed. This is the only constant difference I have been able to discover. The tarsal claws are unequal. A careful comparison of the six examples before me with five of *chambezi* also shows that the pale spots on the marginal black on h.-w. underside are, though variable in size, more rounded in *mansya* than in *chambezi*.

The specimens show a great variation in size. One ♂ is 50 mm. in expanse and differs from the rest in having broader black margins, a small discal spot in area 5 of h.-w., and two small spots on h.-w. discocellulars. One ♂ has a whitish suffusion at base of 1b in f.-w. In only one specimen is there a subbasal spot in 1b in f.-w. and that only on one side. The type specimen has no spot in area 2 in f.-w. though this spot is present in varying degrees of intensity in the other examples. Two small ♂♂ are dull orange ochreous instead of rosy red.

♀. The single female in the series is small (40 mm.). The wings are dull smoky ochreous, with a tendency to orange in the apical area. All the spots in f.-w. except that on discocellulars are but faintly indicated on the upperside. The abdomen is black above with lateral white spots, and yellowish white beneath, and the "seal" is somewhat similar to that described by Trimen in the ♀ *onerata*. In this ♀ and in three of the ♂♂ the f.-w. discal row of spots forms a nearly straight line across the wing, in the others the line is angulated though not so sharply as in *A. chambezi*.

In examining the eleven examples of Neave's "*nohara chambezi*" in the Oxford Museum, my attention was attracted to the small ochreous ♀ above described and from that to the small males which appeared to correspond with

it, and on making a preparation of the male armature I was surprised to find the very remarkable differences which may be seen on reference to my figures on Plate IX. A careful examination of the genitalia of all the other examples resulted in the sorting out of six specimens of the new form. They were all taken by Mr. Neave in the neighbourhood of the Mansya River and Lake Young at the end of October and beginning of November 1908.

48. *ACRAEA ONERATA*.

Acraea onerata, Trimen, Proc. Zool. Soc., p. 61, pl. 8, f. 7, 8, 8a (1891); Aurivillius, Rhop. Aeth., p. 97 (1898).

DAMARALAND (Okavango R.).

♂. Expanse 44 mm. F.-w. Ground-colour bright brick red much like that of a not too fresh example of *A. atolmis*. Costa very narrowly black. Apex and hind margin narrowly black. Nervule ends black nearly as far as end of cell. A little black at base of wing. Black spots as follows:—One in cell above origin of nervule 2, two on upper part of discocellulars. Beyond these, two together in 5 and 6, one beneath the other, followed by one in 4 more distally placed and pointing outwards. This followed by a fourth just beneath it but pointing inwards. A large spot at base of area 2. In 1b a minute spot near base close to median, and a submarginal beneath spot in 2 but more distal.

H.-w. with a little black basal suffusion and a black hind-marginal border about 2 mm. wide with only a faint trace of paler internervular markings. Black spots as on underside.

Underside. F.-w. as above but paler, and inclined to pinkish. Spots as above with an additional brownish mark between the cell spot and end of cell, and another between end of cell and spot in 3.

H.-w. pinkish red with black spots as follows:—One in 9, one in 8 against precostal, two in 7, the outer one forming the first of a discal band of eight, the second in 6 nearer margin, third in 5, still more distal, fourth in 4, more proximal (immediately under first), fifth in 3 (under fourth), sixth in 2, seventh in 1c more distal, eighth in 1a, more proximal. Two in cell, the second transverse, and a basal and subbasal in 1c, a spot in 1b, and a subbasal in 1a. Marginal border black enclosing small white internervular spots.

Head black with an orange spot between eyes and two on collar. Thorax and basal part of abdomen black, terminal portion orange. Claws unequal.

♀. Resembles the ♂ but the ground-colour is more dusky especially in the f.-w. The terminal portion of abdomen is whitish.

I have described the ♂ from a single example in the collection of Mr. Roland Trimen. This specimen differs slightly from the type in being of a brighter red, in not having a yellowish basal patch on h.-w. beneath, and having the spots slightly different on the h.-w.

The ♀ I know only from the figure (*l. c.*), both it and the type ♂ being in the S. African Museum at Capetown. My search through large collections here and on the Continent has failed to reveal another example, although I have seen many specimens labelled with the name *onerata*. The reputed specimens in the Staudinger collection are a form of *A. nohara*, and in another large collection I found an alleged example which proved to be *periphanes*.

A. onerata is not a very distinctive form and is difficult to identify satisfactorily without further material. The country whence the type was received has not been much worked so that we may hope to see further examples in the future.

49. *ACRAEA ROHLFSI*. Pl. I, f. 7 (♂).

Acraea rohlfsi, Suffert, Deut. Ent. Zeit. Iris, p. 124, pl. 3, f. 5 (1904).

UKEREWE I. (in south of Lake Victoria Nyanza).

♂. Expanse 46 mm. F.-w. bright brick red. A narrow black border round costa, apex, and hind margin, continued as a black line along inner margin. A little black suffusion at base especially in 1b and 1a. Nervures black. The nervule ends rather broadly black widening somewhat where they reach the hind margin so that the red ground-colour is divided up into broad clavate streaks. Black spots as follows:—A large spot in cell over origin of nervule 2, a spot on the discocellulars, and beyond cell a band of large spots extending from costal black into area 3, the spot in this area being nearly separated from those above it. In 2 and 1b two small submarginal spots lying parallel to hind margin. In 2 also a large spot touching median, 3, and 2, and beneath it but nearer margin a spot placed in a line with that in 3 parallel to hind margin. A small spot in 1b nearly midway between base and origin of nervule 2.

H.-w. bright brick red with a little black at base in 1c, 1b, and 1a. A narrow black marginal border the inner edge of which, between the nervules is straight, and narrowly edentate on the nervules. Black spots as on underside.

Underside. F.-w. dull brick red with black spots as above. Costa and hind margin only slightly darkened. Nervules grey black, and internervular rays at apex inclining to orange.

H.-w. yellowish pink the basal half inclined to reddish. A very narrow grey hind-marginal border, inwardly edged with orange red internervular marks about twice the width of the border. Nervule ends black. Black spots as follows:—One at base in area 9, three equidistant spots in 7 the second just beyond origin of nervule 7. Between and beneath the two more distal of these, a small spot in 6, and beneath it but slightly nearer margin a small spot in 5. One at base of areas 4, 3, and 2, all touching cell. Beneath that in 2 but nearer margin a large spot in 1c, and a second at the same level in 1b. Also two spots in cell, the second rather oblique, its lower end touching median just beyond origin of nervule 3. A basal and a subbasal in 1c and 1a, and a subbasal in 1b.

Head and thorax black with two or three reddish dots. Abdomen black above with small reddish lateral dots towards the extremity. Claws unequal.

It is through the kindness of Herr Ertl of Munich that I am able to give a figure and full description of this butterfly, he having sent me the type for that purpose. The specimen has the appearance of being dwarfed or not fully expanded, but is otherwise in good condition. It is not quite like anything else I have seen, and further examples will be awaited with interest. It was taken on the Island of Ukerewe in the southern part of Lake Victoria Nyanza.

50. *ACRAEA ATOLMIS*. Pl. IX, f. 9. Pl. XV, f. 27. .

Acræa atolmis, Westwood, Oates, Matabeleland, p. 343, pl. F, f. 3, 4 (1882); *l. c.*, ed. 2, p. 351, pl. 6, f. 3, 4 (1889); Trimen, Proc. Zool. Soc., p. 63, pl. 8, f. 1-3 (1891); Aurivillius, Rhop. Aeth., p. 97 (1898); Neave, Proc. Zool. Soc., p. 21 (1910).

= *acontias* (f. *aestiv.*), Westwood, *l. c.*, p. 345, pl. F, f. 7, 8 (1882); *l. c.*, ed. 2, p. 353, pl. 6, f. 7, 8 (1889); Trimen, *l. c.*, p. 64, pl. 8, f. 4 (1891).

= *luxi*, Rogenhofer, Ann. Mus. Wien., 4, p. 550, pl. 23, f. 5 (1889).

f. decora.

= *acontias* ab. *decora*, Weymer, Ent. Zeit. v. Guben, 16, p. 62 (1901); Iris., p. 225, pl. 2, f. 5 (1903).

ANGOLA (Longa R., Don Carlos, Bihé, Makweta, Luacinga R., Benguella, Guimbungo); DAMARALAND (Ovambo); CONGO (Stanley Pool, Lualaba Valley); RHODESIA (Victoria Falls, Chambezi Valley, Buluwayo, Barotseland).

♂. Expanse 42–58 mm. Dry season form. Wings bright brick red, with black markings. Costa, apex, and hind margin narrowly black. Nervules rather heavily marked with black for a length of some 7 mm. at apex and to a gradually decreasing extent towards hind angle. Very slight basal black suffusion, sometimes absent. A basal black streak in 1b. A transverse spot in cell over point of origin of nervule 2. A mark on upper part of end of cell. Beyond end of cell a row of five small spots, usually almost in a straight line at right angles to costa, but occasionally irregularly placed. The fifth spot (in 3) separated from the rest. A spot in area 2 close to median, and a sub-marginal spot in 1b.

H.-w. with a slight black basal suffusion and some minute black spots more easily observed on underside. An extremely narrow black marginal line from apex to anal angle.

Underside. F.-w. dull pink as far as discal row of spots, remainder pinkish ochreous striated by the black nervules and by orange internervular streaks. A black spot at base of costa. Other spots as on upperside, and sometimes a subbasal spot in 1b.

H.-w. dull pinkish ochreous to ochreous and striated by the fine black nervules and by orange internervular streaks. An extremely narrow black hind-marginal line. Black spots all very small as follows:—A discal row of eight, one in each internervular space except 3. That in 7 somewhat before middle of the area, and the next three closely beneath it arranged in a nearly straight line at right angles to costa. The fifth in the angle between 2 and the median, the sixth linear and obliquely transverse, the seventh linear and transverse, the eighth minute and more proximal. A dot on end of cell at origin of 6. A spot in 8 against precostal, a subbasal in 7, two in cell (the second linear and transverse) a basal and a subbasal in 1c, a subbasal in 1b, and 1a (that in 1b more distally placed).

Head and collar with brownish tufts, thorax black with some brownish hairs. Base of abdomen black, remainder pale orange ochreous. Claws unequal.

♀. Resembles ♂ but ground-colour rather less brilliant, and a trace of a pale subapical bar just beyond f.-w. discal spots. In one example before me the ground-colour is pale brownish ochreous and there is a distinct whitish subapical bar. Abdomen black above with large yellowish lateral spots. Pale yellowish beneath.

Wet season form ♂. Ground-colour as in dry form but all the black markings larger. A black marginal border about 1 mm. wide round both wings, narrower at angle of f.-w. and from angle to base of h.-w. All spots much larger than in dry form. In f.-w. an extra spot near base of lb and a hind-marginal spot in 1a immediately below the spot in 2. In h.-w. a well-developed spot in 3, close to end of cell.

Underside much as in dry form, but spots larger in f.-w. and in h.-w. 3 the extra spot is present. In f.-w. there is a narrow submarginal line of ochreous along hind margin, and in h.-w. a similar line rather broader and bounded on its inner edge by a fine black line.

♀. Ground-colour dull brownish ochreous to sepia black, spotted as in ♂. The blackest forms show a small white subapical bar in f.-w. the development of which becomes less the more nearly the ground-colour approaches that of the ♂.

Weymer's ab. *decora* is a ♂ with much of the f.-w. ground-colour replaced by black. It is merely a melanic aberration.

The "seasonal" forms appear quite irregularly and seem all to occur together at least in Angola.

51. *ACRAEA PERIPHANES*. Pl. IX, ff. 6, 7.

Acraea periphanes, Oberthür, Etud. d'Ent., 17, p. 20, pl. 2, f. 23 (1893); Butler, Proc. Zool. Soc., p. 657 (1894); *l.c.* p. 116 (1896); Trans. Ent. Soc., p. 107 (1897); Aurivillius, Rhop. Aeth., p. 97 (1908); Neave, Proc. Zool. Soc., p. 19 (1910).

L. MERU; NYASSALAND (Zomba); CONGO (Lualaba, Katanga); RHODESIA (Kasama, Lower Chambezi R., L. Bangweolo).

f. *beni*.

= *A. beni*, Bethune-Baker, Proc. Zool. Soc., p. 110 (1908); Eltringham, Novit. Zool., xviii, p. 152 (1911).

ANGOLA; RHODESIA (Lower Chambezi Valley; L. Bangweolo).

f. *melaina*, Eltringham, Novit. Zool., xviii, p. 152 (1911).

= *periphanes*, (part,) Neave, Proc. Zool. Soc., p. 19 (1910).

RHODESIA (Lower Chambezi Valley ; L. Bangweolo).

f. *umida*.

= *onerata*, f. *umida*, Wichgraf, Berl. Ent. Zeit., 53, p. 246, pl. vi, f. 10 (1908).

= *periphanes*, f. *marginata*, Eltringham, Novit. Zool., xviii, p. 153 (1911).

RHODESIA (Chinsali ; Lower Chambezi Valley ; L. Bangweolo).

f. *acritoides*, Eltringham, Novit. Zool., xviii, p. 153 (1911).

= *periphanes*, (part,) Neave, Proc. Zool. Soc., p. 20 (1910).

RHODESIA (Chinsali ; Lower Chambezi Valley ; L. Bangweolo).

A. periphanes periphanes.

♂. Expanse about 56 mm. Wings bright red with a rosy tinge. Costa very narrowly black from near end of cell. Apex black (6 mm. wide) the inner edge of the patch somewhat suffused. Hind margin narrowly black widened somewhat at the nervules. A basal black streak in 1b. Black spots as follows:—One in cell above origin of nervule 2. A double spot on upper part of discocellulars. Beyond the cell a discal row of five spots, the first (in 10) very minute, the second and third (in 5 and 6). These three usually lie in a straight line nearly at right angles to costa. The fourth (in 4) is nearer margin, and is obliquely placed, its long axis being nearly at right angles to the hind margin. Beneath this (in 3) the fifth spot, rounded, and lying in a straight line with the first three. In area 2 a rounded spot close to median, and in area 1b a submarginal and a subbasal spot (this often absent or minute). H.-w. often a little darker in colour than the f.-w. A black basal suffusion, widest in 1c, and a narrow black hind-marginal border, more or less broken up by internervular spots of the ground-colour. The black spots are as on underside but those in 1a and 1b sometimes faintly indicated.

Underside. F.-w. dull pinkish, the apical black of upper-side represented by a greyish ochreous patch on which the nervules are strongly marked in black, and there are fairly distinct orange internervular rays. A fine black marginal line from apex to hind angle. Spots as above and a black dot at base of costa. H.-w. ground-colour orange ochreous, areas 8, part of 7, end of cell, middle of 1c, 1b, and 1a pink. Base of cell, 1c, 1b, and 1a lemon-ochreous. Hind margin lemon-ochreous divided into spots by the black ends of the nervules,

and narrow black internervular arches. A thin black marginal line from apex to anal angle. Black spots as follows:—A median row of eight, the first in 7 near middle, second in 6 nearer margin, third in 4 in a line with second nearly at right angles to costa (very rarely a faint trace of a spot in 5), fourth in 3 close to end of cell, fifth in 2 touching median and nervule 2, sixth in 1c nearer margin, seventh in 1b slightly nearer base, eighth in 1a still nearer base. A spot in 8 rather beyond the precostal, a transverse subbasal spot in 7, one round and one transverse spot in cell, and one on upper discocellulars. A subbasal spot in 1c, 1b, and 1a, the second of these nearer margin than the other two. A basal spot in 1c. Fringes yellowish white. Head and thorax covered with reddish brown hair, abdomen black above, orange beneath, and with whitish lateral spots. Claws unequal.

♀. Expanse about 62 mm. Ground-colour extremely variable, rosy pink, warm sepia, or creamy white with a brownish basal suffusion. Markings as in ♂. The red form closely resembles ♂ on both surfaces, the sepia form has whitish spots on the hind margin of h.-w. and on the underside the f.-w. apex, and the ground-colour of the h.-w. are greenish ochreous. The whitish form is almost without the brown basal suffusion on the underside and the ground-colour is like that of the upperside.

A. periphanes, f. beni.

This form was described by Bethune-Baker as a new species (*l. c.*). It is characterised by the absence of the subapical black in the f.-w. The ♀ may be of the sepia form, or dull red.

A. periphanes, f. melaina. Pl. III, f. 10 (♂).

Differs from typical examples in having a heavy black basal suffusion in both wings. The h.-w. margin is broad with only a trace of pale spots, in the ♂ it radiates into the discal area, and in the ♀ has a more regular though suffused inner edge and is widest (about 4.5 mm.) at 1c and 2. The ♀♀ present the same variations of ground-colour as the ♂♂.

A. periphanes, f. umida. Pl. V, f. 7 (♂).

In this form the basal suffusion and h.-w. margin are as heavy as in the *melaina* form but the apices of f.-w. are not at all or only slightly blackened, though the ends of the nervules are distinctly black. The discal spots are usually larger than in the type form. The ♀♀ present the same variations of ground-colour as do those of the typical form.

A. periphanes, f. *acritoides*. Pl. III, f. 11 (♂).

Differs from typical examples in having more elongated wings, and in the absence of the apical black patch and the discal spots of the f.-w. These differences have the effect of giving the insect a very close resemblance to *A. acrita* as already noted by Neave (Proc. Zool. Soc., p. 20, 1910). Of this form I have only seen male examples.

Examples of *A. periphanes* from the Alala plateau, N.W. Rhodesia, present much the same series of forms, but the specimens are generally of smaller size.

The extraordinary formation of the male genital armature in *periphanes* separates it very definitely from allied species.

The different forms above described are neither seasonal nor geographical unless Angola produces only the form *beni*. Even then the latter could not be regarded as a subspecies since it also occurs in other localities. It is a curious fact that dead and dried examples of this species usually have the last three or four segments of the abdomen sharply bent downwards and forwards.

GROUP VIII.

52. *ACRAEA AUREOLA*. Pl. II, f. 8 (♂). Pl. IX., ff. 14, 15.

Acraea aureola, Eltringham, Novit. Zool. xviii, p. 149 (1911).

ANGOLA (Bihé).

♂. Expanse 60 mm. Rich golden yellow with black spots and markings. F.-w. narrow and pointed, base very slightly suffused with black; ground-colour of basal portion of a somewhat richer tint than the remainder: costa very narrowly black except at base; subcostal, nervule 6, and distal ends of remaining nervules black. Hind margin narrowly black, expanded into small triangular marks at ends of nervules. A large ovate transverse spot in cell above origin of 2. A subquadrate spot on upper part of end of cell. A little beyond cell an outwardly convex row of five rather small rounded spots; beneath these nearer to base, and between nervules 2 and 3, a rounded spot; below this and slightly nearer margin a small, rather crescentic spot, and a very small subbasal spot in area 1b close to median.

H.-w. rather paler than f.-w.; a moderately heavy black basal suffusion; in area 7 a subbasal spot followed by a larger transverse spot near middle of costal margin; beneath this but

nearer margin a spot in area 6. In middle of cell a transverse V-shaped spot, the angle pointing outwards; remaining spots obscured by basal suffusion. Hind margin with a very narrow black line, and a series of well-marked black internervular arches.

Underside. F.-w. resembling upperside but paler and duller; apical portion pinkish ochreous; nervules not black and without triangular marginal marks. No basal suffusion. H.-w. pinkish ochreous; the basal portion brown ochreous, except above the subcostal; a round black spot near base of cell, followed by a V-shaped mark as on upperside. In area 1c a basal spot followed by another V-shaped mark, and a spot in 1b and 1a; other marks as on upperside.

Head and thorax brown; basal part of abdomen black, remainder orange; tarsal claws unequal.

Only a single example of this beautiful species is known to me. It appears to be very distinct. The structure of the genital armature is quite characteristic, and the dorsal abdominal plate is folded in a very peculiar manner, as I have endeavoured to show on Pl. IX, f. 15. I have placed the species in a separate group, as it does not appear to have any near allies.

GROUP IX.

53. *ACRAEA ACRITA*. Pl. X, ff. 1, 4. Pl. XVI, f. 10.

Acraea acrita, Hewitson, Exot. Butt. (*Acraea*), pl. 3, f. 18 (1865); Trimen, S. Af. Butt., 3, p. 381 (1889) (part); Proc. Zool. Soc., p. 28, pl. 4, f. 4 (1894); Aurivillius, Rhop. Aeth., p. 96 (1898); Neave, Proc. Zool. Soc., p. 16 (1910) (part).

f. *msamwiae*, Strand, Mitt. Zool. Mus. Berlin, v. 2, p. 282 (1911).

f. *aquilina*, Strand, *l. c.*, p. 281 (1911).

f. *nyassicola*, Strand, *l. c.*, p. 282 (1911).

PORTUGUESE E. AFRICA (Mt. Pakolwe); MASHONALAND; ZAMBESI; MANICALAND; RHODESIA (Chambezi, Luangwa, Alala Plateau, Kafue R., Mt. Kapsuku, Ft. Jameson); NYASSALAND.

A. acrita ambigua, subsp. Pl. X, ff. 9, 12.

Trimen, Proc. Zool. Soc., p. 70, pl. 9, f. 11 (1891); Aurivillius, Rhop. Aeth., p. 96 (1898); Neave, Proc. Zool. Soc., p. 17 (1910); Strand, Mitt. Zool. Mus. Berlin, p. 280 (1911).

f. bella. Pl. X, ff. 13, 14.

Weymer, Ent. Zeit. Ver. von Guben, p. 61 (1901); Iris, p. 225, pl. 2, f. 4 (1903); Strand, *l. c.*, p. 281 (1911).

L. BANGWEOLO; LUWINGU; TANGANYIKA PLATEAU; MANICALLAND; BAROTSE COUNTRY; E. DAMARALAND (Okavango).

Acraea acrita pudorina, subsp. Pl. X, ff. 3, 6.

Staudinger, Exot. Schmett, i, p. 84, pl. 33 (1885); Pagenstecker, Jahrb. Hamb. Naturw. Arnst., 10, 2, No. 6, p. 19 (1893); Butler, Proc. Zool. Soc., p. 566 (1894); Trans. Ent. Soc., p. 520 (1895); Aurivillius, Rhop. Aeth., p. 96 (1898); Strand, Mitt. Zool. Mus. Berl., 5, 2, p. 281 (1911).

f. utengulensis, Thurau, Berl. Ent. Zeit., 48, p. 130, pl. 2, f. 9 (1903); Strand, *l. c.*, p. 281 (1911).

BRITISH E. AFRICA (Mori R., Kibwezi, L. Baringo, Ngomeni, Nandi, Kikuyu Escarpment, Taita, Fort Hall, Machakos, Taveta, Rabai); GERMAN E. AFRICA (Mt. Kilimandjaro); ZANZIBAR COAST.

A. acrita littoralis, subsp. nov. Pl. X, ff. 7, 10.

= *acrita*, Trimen, S. Afr. Butt., 3, p. 381 (1889) (part).

f. aquilia, Thurau, Berl. Ent. Zeit., 48, p. 129, pl. 2, f. 8 (1903); Strand, Mitt. Zool. Mus. Berl., 5, 2, p. 280 (1911).

f. chaeribulula, Strand, *l. c.*, p. 281 (1911).

f. usaramensis, Strand, *l. c.*, p. 282 (1911).

GERMAN E. AFRICA (Tabora, Manderu, Dar-es-Salaam, Usaramo, Lindi).

A. acrita manca, subsp. nov. Pl. X, ff. 2, 5. Pl. XVI, f. 12.

= *A. guillemei manca*, Thurau, Berl. Ent. Zeit., 48, p. 305 (1903).

f. lindica.

= *acrita*, *f. lindica*, Strand, *l. c.*, p. 282 (1911).

GERMAN E. AFRICA (Irangi, Iraku, Itumba, Usagara, Usukumu, Tabora).

A. acrita bellona, subsp. Pl. X, ff. 8, 11. Pl. XVI, f. 11.

Weymer, Deut. Ent. Zeit., p. 728 (1908); Strand, Mitt. Zool. Mus. Berl., p. 280 (1911).

ANGOLA (Benguella, Chissamba, Caconda, Calweha, Ceramba, Guiballa).

A. acrita, *f. pauperata*.

Thurau, Berl. Ent. Zeit., p. 129 (1903); Strand, *l. c.*, p. 281 (1911).

(A form liable to be found in any locality, and differing only in absence of subbasal spot in f.-w. 1b.)

Acraea acrita appears to be a very unstable species of wide distribution, and on the verge of becoming divided into several different species. Its extreme variability combined with an excessive development of seasonal dimorphism has led to the description of a confusing multiplicity of forms. The highly complicated structure of the male armature, extending as it does to remarkable modifications in the structure of the dorsal abdominal plate, serves rather to enhance than to mitigate the difficulty. For a time I was of opinion that the forms could be resolved into several distinct species, but having now examined some hundreds of examples, including specimens from practically every known locality and taken at different seasons, and having also examined the structure of the male and female armatures in examples occurring throughout the range of the species, I can find no satisfactory means of dividing the forms into anything more definite than subspecies. Several geographical races or subspecies appear to be recognisable. At the northern limit of its range the subspecies *pudorina* occurs, characterised by its more than usually elongated wings, and the paucity or absence, according to the season, of spots in the f.-w. Further south, along the East Coast and extending as far as Delagoa Bay, is the subspecies which I have called *littoralis*. I should have been glad to have avoided the addition of another name to the already over-extended list, were it not for the fact that most of the existing names of forms which appear to belong to this subspecies indicate definite localities, and thus are apt to be misleading. Following this are the typical *acrita* and *acrita ambigua* which may be regarded as the central races, whilst in Angola the subspecies *bellona* appears to be perhaps the most distinctly separated of all, and is characterised by the exceptionally large size of the black spots in the f.-w.

These races include all the described forms except *f. pauperata*, Thureau, and the subspecies *manca*.

Pauperata may occur in any subspecies, being merely distinguished by the absence of the basal spot in area 1b of the f.-w. It is unfortunate that this feature should have been utilised as a key character by Strand in his list of the forms (*l. c. sup.*), since it is one of the most variable and unstable features of the species. It is not consistently absent even in *pudorina*, whilst several

examples before me have the spot in one wing and not in the other. The subspecies *manca* is described later.

It is scarcely possible from the wing pattern alone to distinguish with certainty between all the races of *acrita*. They can, however, be to some extent distinguished (save in the case of transitional forms) by the central process of the dorsal abdominal plate which covers the male armature. In *pudorina* this is very short and cup-like, in *littoralis* it is of medium length and blunt, in *acrita acrita* it is long and somewhat spatulate, but in *bellona* it is usually (though not invariably) pointed, whilst there is always a prominent tooth, sometimes of bifid structure, at the base on the ventral side. These features can usually be observed in the dried specimen merely by the aid of a lens, especially after the characteristic appearance has been studied from the plates accompanying the present work.

To give a minute description of all the named forms of *A. acrita* would scarcely, I think, owing to the great variability of the species, serve a useful purpose. I shall therefore endeavour to give such typical descriptions, together with an account of the principal directions in which variation takes place, as should enable the collector to identify as nearly as possible, examples of the species.

With the exception of extreme wet-season forms of the female, *acrita* may generally be recognised by the peculiar flame orange-colour of the wings, usually with a paler or even whitish discal bar in the f.-w., by the absence of spots beyond the end of f.-w. cell (except in *manca*) by the presence of three, usually well marked (except in *pudorina*), often very prominent, black spots in f.-w., one on the end of cell, one in area 2, and one in 1b, the latter close to margin, and all three in a straight line at right angles to the costa.

The following typical examples may be thus further described :—

A. acrita acrita.

♂. Expanse 60–72 mm. Dry season. Ground-colour of all the wings flame orange, tending basally to scarlet. Outer half of f.-w. rich orange. A narrow black line along costa. A black apical tip about 2 mm. wide, and a narrow black line round margin. A large black spot in cell above, and usually slightly beyond origin of 2. On upper half of end of cell a double spot. In

basal part of area 2 a spot, and a submarginal spot in 1b. These three lie in a straight line across the wing at right angles to costa. There may also be a subbasal spot in 1b. This spot varies considerably. It may be present in one wing and not in the other, or it may even be double in one wing and single in the other.

H.-w. with a slight black basal suffusion, and a hind-marginal border formed of well-marked black arches on a marginal black line, the latter continued as a narrow line right round the inner margin. Black spots variable and more easily observed on the underside.

Underside, f.-w. resembles the upper, but paler. The apical area ochreous with orange internervular rays, and ends of nervules black. A black spot at base of costa, but no apical black. Spots as above. H.-w. creamy ochreous with red splashes between the nervules. Black spots as follows:—A discal row beginning with one in 7 beyond the middle, second in 6 about 2 mm. nearer to margin, very rarely a spot in 5, when present small and just below the second, a spot in 4 close to end of cell, a spot (sometimes absent) in 3, touching end of cell, another in 2 touching median and 2, one in 1c nearer to margin, one in 1b further from margin and on a level with that in 2, and usually a minute spot still nearer to base in 1a.

A spot in area 9 on base of cell, one in 8 some distance beyond precostal, a subbasal in 7, two spots in cell, one in 5 on middle discocellular, a basal and a subbasal in 1c, ditto in 1b, and a basal in 1a.

Head black with an orange tuft between the eyes, collar orange, thorax black with red hairs, base of abdomen black with orange lateral spots, remainder orange. Fringes of all wings conspicuously white. Claws unequal.

♂. Wet season. Ground-colour rather darker. F.-w. with a black basal suffusion reaching the subbasal spot in 1b. Spots as in dry form but larger. Apical black 3 to 4 mm. wide. • H.-w. with more black basal suffusion, especially in 1c. Discal row of spots all present and nearly all confluent. Marginal black border about 3 mm. wide to nervule 2, where it widens out to 4 mm. There is only a trace of internervular spots of the ground-colour. In extreme examples the black may join the basal suffusion, or even overrun almost the whole of the h.-w.

Underside much as in dry season form, but black spots larger, and h.-w. marginal arches heavier.

♀. Dry season. Expanse 60 to 66 mm. F.-w. much more rounded than in ♂. Ground-colour similar but duller. F.-w.

apical black, rather broader. H.-w. marginal black, broader and heavier. Dorsal part of abdomen black, with yellowish lateral spots.

♀. Intermediate between wet and dry. F.-w. coffee brown at base, outer half ochreous. H.-w. almost entirely suffused with black. Spots as in ♂. Underside proportionately duller.

♀. Wet season. Smoky black, spots especially in h.-w. only just distinguishable. Subapical part of f.-w. smoky ochreous. Underside f.-w. smoky ochreous at base, outer half dull ochreous. H.-w. dull red. Base of cell and 1c pale sage green, marginal black arches enclosing pale sage green spots. Abdomen black above with white lateral spots.

A. acrita ambigua, subsp.

♂. Dry season. Distinguished from *acrita acrita* principally by the increased width of the apical black in the f.-w. which is about 6 mm. wide. Extreme examples may have only the cell spot and the discocellular spots in f.-w., and the black arches of h.-w. margin are often obsolescent towards the anal angle. On the underside the h.-w. is without the internervular red splashes in the discal area. The f.-w. subapical area is usually paler than in *acrita acrita*.

♂. Wet season. Differs from the dry form in the same way as the corresponding forms of *acrita acrita*.

♀. Dry season. Resembles the ♂ but is duller coloured and has more rounded wings.

♀. Wet season. Similarly marked to the ♂ but the ground-colour dusky grey and the f.-w. subapical area white.

The figure of the ♀ of this form accompanying Trimen's original description is a somewhat abnormal example combining some of the dry-season red with the white subapical bar of the wet season.

A. acrita bellona, subsp. Pl. V, f. 4.

♂. Dry season. Easily distinguished from all the other forms by the very large size of the spots in cell, on discocellulars, and in area 2. These spots, especially in wet season ♀ ♀ may be so large as to become confluent. In addition to this distinction the f.-w. is more pointed and the apical black is 7 to 8 mm. broad. Occasional very dry ♂ ♂ may be rather difficult to distinguish from wet ♂ ♂ of *ambigua*, though the spots referred to seem never to be reduced quite to the size of those in the latter subspecies. There is the same absence of red splashes on the underside.

♂. Wet season. Differs little in ground-colour from the dry

form but the spots are larger, especially those of the f.-w. The area between end of cell and apical black is very pale ochreous, and the h.-w. marginal black is better developed though not to the extent found in *acrita acrita*.

♀. Dry season. Resembles the dry season ♂. Very slightly duller in colour, and with more rounded wings.

♀. Intermediate. Resembles the ♂ but wings more rounded and red colour replaced by dusky brown. Spots large and f.-w. apical black about 9 mm. wide. A white discal patch extending from end of cell to apical black. Underside correspondingly dull in colour.

♀. Wet season. Resembles the foregoing intermediate form but the ground-colour dark smoky grey. Underside with base of cell and area 2, also internervular portions of hind-marginal border pale sage green.

♀ ♀ of *acrita bellona* are distinguished by the character of the genital plate which is very much narrower structure than in other forms (except *pudorina*). It is in fact in a condition intermediate between that in *pudorina* and the other forms.

A. acrita littoralis.

♂. Dry season. Ground-colour somewhat less brilliant than in *acrita acrita*. F.-w. apical black 3 mm. wide. H.-w. hind-marginal black arches rather faint towards anal angle. Many of h.-w. spots rather faintly indicated on upper side.

♂. Wet season. F.-w. spots larger than in dry form, and apical black broader than in *acrita acrita* (4-5 mm.). H.-w. discal spots very variable. Rarely a trace of a spot in area 5, sometimes no spot in 3, often all the spots very close together. Hind-marginal border with well-marked black arches varying to an almost entirely black border 3 mm. wide. H.-w. underside with or without red splashes in the discal area.

♀. Dry season. Resembling dry ♂ but with more rounded wings and duller in ground-colour. H.-w. hind-marginal border heavier, often leaving only a trace of internervular spots. The inner edge of this border may be either sharply defined or suffused.

♀. Wet season. Marked as in dry ♀ but ground-colour smoky grey and f.-w. apical black 6-7 mm. wide. A discal white band between apical black and end of cell. Underside correspondingly dull in colour. H.-w. marginal spots white or greenish.

This form is distinguished from *acrita acrita* principally by the broader apical black of the f.-w. and the shorter

process of the terminal dorsal abdominal plate. In spite of its geographical position it is somewhat intermediate in pattern between *acrita acrita* and *acrita ambigua*.

A. acrita pudorina.

♂. Dry season. F.-w. rather more pointed than *acrita acrita*. Ground-colour rather duller flame colour varying to rosy. F.-w. almost devoid of spots, though curiously enough there is often a faint trace of a discal row of spots beyond the cell. No basal black suffusion and very little apical black, often a mere marginal line. Though the ground-colour is rather richer near base, there is no distinct paler outer area of the ground-colour. The spot in 2 when present is nearly always nearer the median than in the other forms of *acrita*, thus destroying the straight line effect already referred to. The spots on h.-w. are faintly indicated on the upperside, as also are the hind-marginal black arches. There is a slight black basal suffusion. Discal area of the h.-w. underside is not splashed with red.

♂. Wet season. Differs only in the somewhat more distinct black markings. A black suffusion at base of h.-w. Apical black about 1 mm. wide and h.-w. marginal black 3 mm. wide, sometimes leaving only a trace of internervular markings.

♀. Dry season. Resembles ♂ but the wings are more rounded.

♀. Intermediate. Duller than ♂ with a brown basal suffusion in f.-w. and rather rosy-pink h.-w., the marginal border of which is rather heavily marked with black.

♀. Wet season. Resembles the intermediate form in markings but ground-colour dusky ochreous grey. No subapical white. Black basal suffusion in both wings. H.-w. marginal border black 3 mm. wide with a faint indication of pale internervular spots. Abdomen black with white lateral spots. Underside correspondingly dull in colour and h.-w. hind-marginal spots white.

A. acrita f. *manca*. Pl. III, f. 8 (♂).

This peculiar form is comparatively rare in collections. The ♂ has an expanse of 52 mm. and the ♀ 56. The ♂ resembles in shape a small but uniformly coloured example of *acrita pudorina*. The f.-w. has a narrow black apical border. A spot in cell just beyond origin of 2 and one on upper part of end of cell. The spot in 2 touches the median so that it does not make a straight line with those on end of cell and in 1a. There is a well-marked subbasal spot in 1a, and a *fully developed discal band of four spots beyond the cell*, the first of which is very

minute. The h.-w. has a slight basal black suffusion and a clearly defined marginal border of black arches. The discal and basal spots are as in other forms of *acrita* but there is no spot in 3 and 5. The underside is paler and duller. The discal area of h.-w. is devoid of red splashes and the internervular spots of the margin are ochreous.

The ♀ resembles the ♂ but the ground-colour of the f.-w. has a brownish tinge and the spots are larger, especially the first of the f.-w. discal row. But for this discal row of spots, and the marginal spots of h.-w. underside which are ochreous instead of whitish, this ♀ closely resembles certain intermediate ♀♀ of *acrita pudorina*.

A. acrita manca. f. *lindica*.

♂. Expanse 58–64 mm. The apical black about 5 mm. wide. From middle of wing to the inner edge of the apical black the ground-colour is rich ochreous the basal area being of the usual flame orange colour. The usual spots are present but small, but there are *no subapical spots* as in the typical *manca* form. In the h.-w. the spots are as usual but I have seen no example of either sex having a spot in area 3. The marginal border is formed of a series of confluent black rings enclosing spots of the ground-colour.

♀. Dry season. Resembles ♂ but rather duller, the ground-colour having a tendency to rose colour.

♀. Wet season. Sepia grey with a white subapical patch, f.-w. apical black, all spots, and h.-w. marginal border rather more heavily marked than in dry season form.

The occurrence of this apparent subspecies of *acrita* with its two very different forms adds greatly to the complication and difficulty of the subject. My reason for separating them from the other forms is based on the structure of the dorsal abdominal plate in the ♂ and that of the genital plate of the ♀. In the former the central process is very long and lingulate, and the latter is a thick cylindrical chitinous structure very different from the corresponding organ in other forms. These structures are constant and similar both in the *manca* form with its subapical spots, and in the *lindica* form in which these spots are absent. I have used the name *lindica* because the male described agrees with that so named by Strand (*l. c.*). That author's example was taken near Lindi, but all the other examples I have seen have been found in the more central parts of German E. Africa.

There are before me ♀ examples of an intermediate form of the *pudorina* subspecies which show traces of the f.-w. subapical spots as developed in the *manca* form, but the structure of the ♀ genital plate is quite different and conforms to that of other ♀♀ of *acrita*.

But for the above facts I should be inclined to regard the *manca* form as a distinct species, such a view being strongly supported by the difference in the structure of the abdominal plate. I do not however feel justified in assigning specific rank to the present form so long as we possess so few examples.

It will be understood that the various subspecies of *acrita* above described overlap in their geographical distribution and that intermediate forms are liable to occur, which fact combined with the general tendency to melanic development in the wet season, furnishes material for a very wide range of individual variation.

As a result many form names have been published in connection with this species, these being enumerated in the synonymy already given. Though many of these are of little systematic importance it is necessary for the completion of the present work that these form names should as far as possible be identified. A key has recently been published by Dr. Strand of Berlin (*l. c. sup.*), who also made several additions to the list. I give below those to which allusion has not already been made in the foregoing descriptions, together with notes as to the apparent systematic position of each form.

- f. *aquilina*, Thureau, is a wet season ♀ of *acrita littoralis*.
- f. *utengulensis*, Thureau, appears to be a wet season ♂ of *acrita pudorina*.
- f. *bella*, Weymer, is a dry season ♂ of *acrita bellona*.
- f. *chaeribulula*, Strand, is apparently an intermediate ♀ of *acrita littoralis*.
- f. *aquilina*, Strand, appears to be a wet season ♀ somewhat intermediate between *acrita acrita* and *acrita littoralis*.
- f. *msamwiae*, Strand, is a wet season ♂ of *acrita acrita*.
- f. *usaramensis*, Strand, is a wet season ♂ of *acrita littoralis*.
- f. *nyassicola*, Strand, is an intermediate ♂ of *acrita acrita*.

There is in the general collection of the Berlin Museum a remarkable form of *A. acrita* bearing the label "Uganda." The ground-colour is very brilliant. Beyond the cell in f.-w. there is a very small spot in area 6, below this a large spot in 5, and beneath that, but nearer margin a dot, more distinctly visible on the underside. The h.-w. has a very broad black border, narrow at the apex but immediately expanding to about 4 mm. and at nervule 3 to some 6 mm. wide. The border on underside is of the usual pattern. The specimen is labelled *guillemei*, but has nothing to do with that species. The process of the terminal abdominal plate is short, a little longer than in the *pudorina* form. No conclusion can be drawn from a single, apparently aberrant specimen of this kind, bearing a vague locality label. I have seen no other example of any form of *acrita* purporting to have been taken in Uganda.

Reference to the drawings of the ♂ armatures of forms of *acrita* shown on Plate X will suggest that marked differences of structure are to be found in these organs. Differences do certainly exist, but from a series of preparations carefully examined I cannot find satisfactory *constant* differences. The peculiar short blunt hooks vary in thickness and in the shape of their extremities, and the size and contour of the massive penis sheath is also inconstant. Moreover with a structure of such complication it is a matter of the greatest difficulty to make accurate comparison of the dimensions of the various parts. Such difficulty would not be insuperable given an unlimited number of specimens from every locality. Each part, uncus, claspers, sheath, etc., could then be carefully measured and tabulated. The magnificent material generously placed at my disposal by the Hon. W. Rothschild almost warranted such an investigation, but numerous though the specimens are, there appear to be some localities still insufficiently represented, so that for the present the problem of the true relationships of the forms of *acrita* must await a future solution. The species does not appear to be rare, so that we may look forward to having the assistance of much needed breeding experiments in the near future.

54. *ACRAEA CHAERIBULA*. Pl. IX, ff. 17, 18. Pl. XVI, f. 8.

Acraea chaeribula, Oberthür, Etud. d'Ent. 17, p. 19, pl. 2, f. 16 (1893); Aurivillius (*acrita* var.), Rhop. Aeth., p. 96 (1898);

Neave, Proc. Zool. Soc., p. 19 (1910); Strand (*acrita* f.)

Mitt. Zool. Mus. Berlin, v. Band, 2 Heft, p. 282 (1911).

NYASSALAND (Zomba); N. RHODESIA; CONGO (Katanga);
GERMAN E. AFRICA.

♂. Expanse 50-58 mm. Wings deep orange-red shading to yellow in f.-w. subapical area, without the tinge of scarlet common in forms of *A. acrita*. F.-w. with some black at base which may be absent in very dry season specimens. Costa very faintly lined with black. Apex with a black tip 8-10 mm. wide usually with a fairly sharply defined proximal edge at right angles to costa. The remainder of hind margin bounded by a faint black line. A spot in cell slightly beyond origin of 2, one on upper part of discocellulars, one at base of area 2 close to median, a submarginal and a subbasal in 1a.

H.-w with a black basal suffusion usually extending into area 7 and widest in 1c. A hind-marginal border formed by a marginal line and black internervular arches. Spots as on underside, those near base obscured by the black suffusion.

Underside. F.-w. ground-colour as above but paler, apical black replaced by greyish ochreous divided by the black nervules and orange ochreous rays. A black spot at base of costa. Other spots as on upperside.

H.-w. dull orange ochreous, base of 7, end of cell, and median portions of 1c, 1b, and 1a splashed with red. Base of cell, 2, 1c, 1b and 1a pale greenish. Marginal border as on upperside but enclosing greenish or greenish-yellow spots. Black spots as follows:—Discal row, one in 7 about middle, one in 6 nearer margin, very rarely a minute spot in 5 beneath the second. Beneath this a spot in 4; in 3 a small spot touching end of cell (often absent), a spot in 2 touching median and 2, a spot in 1c, 1b and 1a, each nearer to base than the spot preceding it. A spot in 8 near precostal, a subbasal in 7, two in cell and one at base of 5 on m.d.c., a basal and a subbasal in 1c and a subbasal in 1b and 1a.

Head black, usually with a pale mark between the eyes, thorax black with red hairs, abdomen black tipped with orange, and with orange lateral spots. Claws unequal.

The above description is that applying to average examples. Very dry forms may have no spots at all in f.-w. and a very pale median area. Very wet forms may have an excess of black suffusion in the h.-w. The most constant feature is the very broad black apex in the

primaries. The ground-colour is also constantly yellower than in *A. acrita*.

♀. Expanse 50–58 mm. Dry season. Ground-colour but little duller than that of ♂. Abdomen black above with white lateral spots. Wing spots often very small, and faint on upper-side, otherwise spots and markings as in ♂.

Wet season. Ground-colour tending to dusky ochreous.

There would seem to be much less seasonal dimorphism in *A. chaeribula*, than in *acrita*.

Professor Aurivillius when compiling his catalogue of African Rhopalocera regarded the species as a form of *acrita*. Neave, however, pointed out (*l. c.*) that it was quite a distinct species, a fact which he established on his experience of the insect in life, and also from an examination of the male armature. In spite of this, however, Strand includes it in his list of forms of *acrita*, merely remarking in a footnote that according to Neave *chaeribula* is a good species.

55. ACRAEA LUALABAE. Pl. IX, f. 16.

Acraea lualabae, Neave, Proc. Zool. Soc., p. 18, pl. 1, f. 4 (1910).

CONGO (Lualaba R.).

♂. Expanse about 50 mm. Wings rather dull orange somewhat paler on f.-w. median area: f.-w. with a very slight black suffusion at base and a conspicuous black tip about 7 mm. wide. A black spot in cell very slightly beyond origin of 2, and one on upper part of end of cell. Two discal spots beyond cell, one in 5 and a larger one in 3. In 2 a large spot touching the median, and in 1b a submarginal and a subbasal spot.

H.-w. dull orange with a black basal suffusion, and a marginal border formed of black arches on a narrow marginal line. Spots as on underside but smaller. In the cotype at Oxford there is a spot in area 5 on upperside, which is reduced to a minute dot on underside. The type has no spot in this area.

Underside. F.-w. as on upperside but paler, the apical black replaced by dark ochreous. A black spot at base of costa. H.-w. pale orange ochreous, lemon ochreous at base of cell to inner margin, reddish at base of area 7, and in median portion of 1c, 1b and 1a. Marginal border with black arches enclosing rounded spots of pale dull ochreous. Black spots as follows:—A median spot in 7, a spot in 6 much nearer margin, under this a minute dot in 5 representing the spot on upperside which is

present in the cotype and not in the type; in 4 a spot near margin immediately beneath that in 6, a spot in 3 not quite touching end of cell, one in 2 touching median and nervule 2, a large transverse spot in 1c, nearer to margin, and one in 1b and 1a nearer to base. In addition to these, a spot in 8 slightly removed from precostal, a subbasal in 7, two in cell, one at base of 5 touching m.d.c., a transverse subbasal spot in 1c and 1a, and between these, but more distally placed, a small spot in 1b.

Head and thorax black, latter with a few brown hairs, abdomen black with the last two or three segments orange. Claws unequal.

♀ unknown.

There are at present only two examples of this *Acraea*, the type in the National Collection and the cotype at Oxford. Both were taken by Neave on the Lualaba River, Belgian Congo. It is distinguishable from small examples of *A. acrita* by the f.-w. discal spots, and from *acrita manca* by the broad black apical patch.

The genital armature is very distinct. The claspers are entirely different from those of *acrita*, or indeed of any other species I have examined. The true uncus is reduced to a mere bristle, whilst the chitinous sheath of the penis is developed into what appears to be a false uncus.

GROUP X.

56. *ACRAEA* *DIODES*. Pl. XVI, f. 13.

Acraea diodes, Suffert, Deut. Ent. Zeit. "Iris," xvii, p. 14 (1904.)

"LOWER GUINEA."

= *lactea*, Neave, Proc. Zool. Soc., p. 20, pl. 1, f. 7 (1910).

BELGIAN CONGO (Upper and Lower Lufupa R.).

♀. Expanse 48-56 mm. F.-w. translucent and having a milky appearance, being sparsely covered with greyish white scales, and for a depth of about 6 mm. the apex is somewhat dusky, the nervules and rays being a little darker. There is a trace of a dark spot in the middle of cell, and another in 2 just under median. In 1b a third much nearer margin. H.-w. rather more thickly scaled dusky white, with a blackish marginal line and internervular arches, the latter inwardly suffused. The spots of the underside show through.

Underside, f.-w. almost scaleless, h.-w. dusky greyish with rather thick well-marked black marginal arches enclosing spots

of ground-colour. End of cell, end of area 2, and all of 1a, 1b, and 1c, except extreme base, scaled with rusty red. Black spots as follows:—One in 9, one in 8, two in 7, the second followed by a spot in 6, and 5 all parallel to the apical margin, one in 4 close to cell, beneath it and nearer margin one in 3, one in 2 touching median and nervule 2, beneath it one in 1c, and one in 1b level with that in 2. Also two in cell, a dot on the middle discocellular, a basal and a subbasal in 1c, 1b, and 1a.

Head, thorax, and abdomen black with a few whitish marks.

In spite of the difference in locality Neave's *lactea* appears to be the same species as Suffert's *diogenes*, the type of which I have carefully examined. The cotype of *lactea* in the Oxford collection differs only in its larger size, its fresher condition, and in the greater extent of red on the underside of h.-w. So far as I am aware there are only three examples known, all ♀♀, and until more material is available it is difficult to decide the true affinity of this form. The genital plate is, as will be seen from a reference to the figure on Plate XVI, of a most curious formation, unlike that of any other species which I have had the opportunity of examining. The portion surrounding the opening of the bursa copulatrix consists of a heavily ridged mass of chitin, thickly set with minute spines or teeth, and resembles in this respect the membrane surrounding the male organs in *periphanes*. It bears no resemblance, however, to the ♀ plate in *periphanes*, which is of comparatively simple structure.*

GROUP XI.

57. *ACRAEA LEUCOPYGA*. Pl. XII, f. 3. Pl. XVI, f. 7.

Acraea leucopyga, Aurivillius, Ent. Tidskr. 25, p. 92, f. 32 (1904); Neave, Proc. Zool. Soc., p. 22 (1910).

= *liszti*, Suffert, Iris, 16, p. 17 (1904).

N.E. RHODESIA (Luangwa Val.); NYASSALAND (Kota Kota, Kigonsera).

♂. Expanse 54–62 mm. Dry season. Wings deep rose pink, tending to deep orange at base, costa, subapical area, and hind

* The suggestion may seem somewhat speculative, but I am inclined to think that *A. diogenes* will ultimately prove to be a ♀ of *A. guillemei*, or, if that form be really distinct from *A. acutipennis*, then a ♀ of the latter.

margin in f.-w., and at base and along inner edge of marginal border in h.-w. F.-w. with a narrow black line along costa and hind margin, and a black apical tip about 5 mm. broad. Black spots as follows:—A spot in cell just beyond origin of 2, and in some examples another smaller spot about 2 mm. nearer base and touching the subcostal. A spot on upper part of discocellulars. Beyond end of cell a discal row of five, the first minute or absent (in 10), the second, third, and fourth (in 6, 5, and 4) in a straight line nearly at right angles to hind margin. The fifth in 3 about the middle. A spot in 2 close to median. Beneath this but nearer margin a spot in 1b, and in the same area a subbasal spot just behind origin of 2. H.-w. with a very little black at bases of nervures, and a black hind-marginal border about 2 mm. wide. Spots as on underside, but those near base and inner margin often faintly indicated.

Underside. F.-w. rose pink, the apex pale ochreous divided by black ends of nervules and orange internervular marks. A narrow black apical and hind-marginal line. H.-w. pinkish ochreous, base and middle part of 1c, 1b, and 1a rose pink, a good deal of orange powdering between the nervules, and a row of orange internervular spots just before the hind-marginal border. The latter formed of narrow clearly defined black arches on a black marginal line, enclosing pale lemon ochreous spots. Black spots as follows:—Discal spots. One in 7 about the middle, one in 6 nearer margin, one in 5 still nearer margin, one in 4 touching end of cell, one in 3 half-way between end of cell and marginal border, one in 2 close to median, one in 1c immediately beneath the last, and one in 1b and 1a further from margin. A spot in 8 close to precostal, a subbasal in 7, two in cell and one in 5 on m.d.c., a basal and a subbasal in 1c; a subbasal in 1b, and a basal in 1a. Fringes whitish, dotted with black at ends of nervules.

Head black with an orange tuft between eyes, and two on the collar. Thorax black with red hairs, and two white dorsal lines and two posterior spots. Abdomen, base black with white lateral spots and transverse lines, remainder white with orange scales at the extremity. Claws unequal.

♂. Wet season. Ground-colour much duller, a black basal suffusion in both wings. H.-w. hind-marginal black broader and often inwardly suffused.

♀. Dry season. Resembles the ♂ but dorsal part of abdomen blacker.

♀. Wet season. Wings dull ochreous, the spots accentuated,

the basal black suffusion extended and the h.-w. hind-marginal black broad and inwardly suffused. Underside correspondingly duller. In extreme forms both wings may be sepia black with a pale ochreous discal bar in f.-w. Abdomen black with small white lateral spots.

The brilliant rose-colour of fresh examples of *leucopyga* is very striking. Neave describes the species as rather rare in the Luangwa Valley, and having the same low flight as *A. oncaea*, which it somewhat resembles on the wing.

58. *ACRAEA INTERMEDIA*. Pl. XI, f. 3.

Acraea intermedia, Wichgraf, Berl. Ent. Zeit., p. 241 ; pl. vi, f. 3, 4 (1908) ; Neave, Proc. Zool. Soc., p. 22 (1910).

RHODESIA (Kalungwisi Valley) ; CONGO STATE (Lualaba Valley).

It is with some hesitation that I maintain this form separate from *A. caldarena*, as, although there are differences in the arrangements of the spots I can find no satisfactory difference in the structure of the respective male armatures. The figures of these would appear to show some differences, but comparison of the preparation of *intermedia* with a series of *caldarena* shows such differences to be very doubtful. Unfortunately I have only been able to secure a single example for dissection, but since series of preparations of the armature of *caldarena* and its near allies show constant and recognisable differences, it is at least remarkable that there should in this case be no marked distinction. The following description is taken from that by Wichgraf.

♂. Expanse 64 mm. Ground-colour uniform dull yellowish brown. F.-w. apical black 7 mm. broad. A very narrow hind-marginal line. The discal spots are three in number (in 3, 4, 5), the middle one being the largest and near to end of cell. These spots lie in a straight line not quite parallel to the edge of the apical black. The spots in 4 and 5 on middle and upper discocellulars rounded and confluent. An ovate spot in cell, and at about one-third of the distance from it to the base a smaller linear spot. The spot in 2 lies nearer to the cell than in *rhodesiana* and *caldarena*, and almost equidistant from nervules 2 and 3, and the spot beneath it in 1a, lies nearer to margin. Midway between this and the base a smaller spot. Nervules blackish towards the margin. Base only slightly suffused.

H.-w. with a stronger suffusion not reaching beyond the middle of cell. The spots well rounded and fairly large, arranged as in *caldarena*, but larger and extended commensurately with the form of the wings.

Underside. Spots as above. The very large bluish white spots of the h.-w. margin enclosed by quite similar arched lines, but these arches are not thicker in the middle as in *caldarena*, *aglaonice*, etc. Basal part of h.-w. marked with brick red. A whitish mark extending from costa through the middle of the cell to 1b, and surrounding the four large subbasal spots. The spot in 1c is also surrounded with white. Abdomen not so black as in *rhodesiana* and the pale marks yellowish. Claws unequal.

♀. Ground-colour dark smoky grey. The space between the apical black and the discal spots white, trapezoidal, the posterior rather suffused portion reaching nervule 3. The yellowish grey-green ground-colour of the underside passes into light chocolate brown at a point two-thirds of the length of the wing from the base. In areas 6 and 10 there are two small extra spots of the discal row.

The locality given for Wichgraf's types is Rhodesia. A male example in the Oxford collection was taken by Neave in the Lualaba Valley (Congo State). What appears to be a dry-season female of the same species was taken by the same collector in N.E. Rhodesia in the Kalungwisi Valley. This specimen is the same colour as the ♂. The spots are nearly all very indistinct, most of them only showing through from beneath. On the underside the f.-w. spots are very small, but those on the h.-w. are of normal size.

One feature which appears to distinguish this form from *caldarena* is not insisted upon by Wichgraf. The first three h.-w. discal spots in 7, 6, and 5 are large, and lie in a nearly straight line which if produced would meet the hind margin at end of nervule 5. In *caldarena* the third of these spots is either directly underneath the second, or only very slightly more distally placed. Moreover the discal spots in f.-w. appear to be nearer the end of cell than in *caldarena*. In spite of these differences the similarity of structure of the male armature in this form and in *caldarena* makes me incline to the belief that it is only a form of the latter species, but a final conclusion can scarcely be attained with the present paucity of material.

59. *ACRAEA CALDARENA*. Pl. XI, f. 1.

Acraea caldarena, Hewitson, Ent. Mo. Mag., 14, p. 52 (1877); Trimen, S. Af. Butt., i, p. 149 (1887); Westwood, Oates, Matabeleland, Ed. 2, p. 355, pl. v, f. 1, 2 (1889); Butler, Proc. Zool. Soc., p. 657 (1893); Trimen, Proc. Zool. Soc., p. 27 (1894); Marshall, Trans. Ent. Soc., p. 553 (1896); Aurivillius, Rhop. Aeth., p. 99 (1898); Butler, Proc. Zool. Soc., p. 191 (1898); Butler, Proc. Zool. Soc., p. 906 (1898); Dixey, Proc. Ent. Soc., p. iii (1906); Dixey and Longstaff, Trans. Ent. Soc., p. 344 (1907); Neave, Proc. Zool. Soc., p. 25 (1910); Fountaine (metam.), Trans. Ent. Soc., p. 60, pl. x, f. 15a, 15b (1911).

= *amphimalla*, Westwood, Oates, Matabeleland, p. 347, pl. E, f. 1, 2 (1881).

= *dircea*, Westwood, l. c., p. 348 (1881).

= *recaldana*, Suffert, Iris, p. 27 (1904).

DAMARALAND; KHAMA'S CO.; N.E. RHODESIA (Luangwa Valley); TRANSVAAL; NATAL; MASHONALAND; MATABELELAND; MANICALAND; NYASSALAND; PORTUGUESE E. AFRICA; GERMAN E. AFRICA; BRITISH E. AFRICA.

f. *neluska*, Oberthür (*oncaea* var. *neluska*), Etud. d'Ent., 3, p. 25, pl. ii, f. 2, 3 (1878).

= *ombria*, Weymer, Stett. Ent. Zeit., p. 82 (1892).

ZANZIBAR; DAR-ES-SALAAM.

♀ f. *nero*, Butler, Ann. Nat. Hist. (5), 12, p. 102 (1883); Aurivillius, Rhop. Aeth., p. 99, pl. i, f. 3 (1898).

V. NYANZA.

A. caldarena caldarena.

♂. Expanse 38-62 mm. Ground-colour varies from pinkish ochreous to a beautiful pale rose colour (= *recaldana*, Suff.). F.-w. Costa very narrowly black. Apex with a black patch about 7 mm. wide continued as a very narrow black line along margin. A slight dusky basal suffusion. Black spots as follows:—One in cell near origin of 2. One at end of cell on upper discocellulars. Beyond cell close to edge of apical black a transverse oblique row of four spots usually almost in a straight line, the first (in 6) sometimes absent. H.-w. with a slight dusky basal suffusion. A very narrow black line round margin, with internervular black arches. Occasionally these are developed to the extent of making an almost continuously black border about 2 mm. wide. Black spots rather variable on upperside, those in 1c, 1b, and 1a often only showing through from beneath. Fringe whitish and rather conspicuous.

TRANS. ENT. SOC. LOND. 1912.—PART I. (JULY) M

Underside f.-w. rather paler than upper side. No dusky suffusion. Apical area ochreous with orange internervular rays. One basal and one subbasal spot on costa. Spots as above. H.-w. pale ochreous. A narrow black line round hind margin and narrow internervular black arches. Discal area with an orange ochreous band parallel to hind margin, its inner edge much suffused. Internervular patches of reddish in median and basal areas. Black spots as follows :—An irregular discal row of nine. The first in 7 rather beyond middle, second in 6 nearer margin, third in 5 immediately beneath, or slightly more discal than the second, fourth in 4 nearer base, fifth in 3 nearly mid-way between end of cell and the marginal black arch. The sixth and seventh in 2 and 1c and lying in a straight line with the fourth. The eighth in 1b rather nearer base, the ninth in 1a still nearer base. A spot in 8 a little distance from precostal and close to costa, a subbasal in 7, two in cell (the second just before origin of 2). A large spot at base of area 5 touching 6 and middle discocellular. A basal and a large subbasal in 1c, a small spot in 1b, and a subbasal in 1a.

Head reddish brown with tufts of same colour on collar. Thorax black with reddish hair. Base of abdomen black with pale lateral spots and narrow transverse segmental bands. The remainder pale pinkish ochreous. Claws unequal.

♀. Expanse 48–60 mm. Dry season examples may be very similar to ♂, but with a larger extent of dusky basal suffusion, and the hind-marginal border almost entirely black. A somewhat intermediate example before me has the ground-colour of a delicate pale salmon pink (= *recaldana*). From this condition every gradation may be found to an extreme wet season form in which all the wings are sepia, with a milk white patch in the f.-w. extending from costa to hind angle, and from origin of nervule 2 to inner edge of dark apical patch. Spots as in ♂. Abdomen black above with white or yellowish lateral spots.

A. caldarena ♀ f. *nero*, Butl.

In this form the ground-colour is greyish ochreous. F.-w. with heavy dusky suffusion extending over nearly the whole wing. H.-w. with a black marginal border and dusky suffusion over the whole wing. The distal ends of areas 4, 3, 2, and 1c are white, bounded distally by the marginal border, and proximally sharply cut off from the ground-colour. Only two examples are known to me, one in the British Museum, and one in the collection of Mr. H. Druce.

A. caldarena f. *neluska*.

The ♂ of this form differs from typical examples in having the f.-w. black apical patch much reduced in width. In three ♂ examples in the Tring Museum the patch does not exceed 4 mm. and in one it is reduced to 3 mm. The ground-colour is somewhat redder than in *caldarena caldarena*. In one example all the f.-w. spots except the discocellular, and most of the h.-w. spots, are obsolescent or wanting. In colouring and general appearance the form resembles *A. pudorella*. The ♀ is like an ordinary wet season specimen of *caldarena*.

The early stages of *caldarena caldarena* are thus described by Miss Fountaine, *l.c.*:—

“The larva of this butterfly also feeds on the flowers and leaves of *Wormskioldia longepedunculata*; it is of a soft pink rose colour, shading into yellow at the extremities, underneath it has a longitudinal white stripe between the legs, extending from head to tail; the spines are black. The pupa is not quite so elongated in shape as that of *A. nohara*, the wing cases are pale, dull drab veined and outlined with black, the abdomen is deep cream-colour with the rows of orange spots so heavily outlined with black as to be almost coalescent. I found this larva, but not at all commonly, at Macequece.”

A. caldarena is described by Marshall as one of the commonest butterflies in Mashonaland. Dixey notes (Proc. Ent. Soc., p. iii, 1906) a strong smell of musty straw in the ♀. The relation of the pink ground-colour to the seasons seems to vary in different localities. Thus Marshall states (T. E. S., p. 553, 1906) that the ground-colour of the wet-season males is of a richer pink, whilst Neave states (Proc. Zool. Soc., p. 25, 1910) that examples taken in the “hot dry Luangwa Valley” are of a brighter colour, being of a peculiar shade of salmon pink.

60. *ACRAEA PUDORELLA*. Pl. XI, f. 5. Pl. XV, f. 24.

Acraea pudorella.

= *A. caldarena*, var. *pudorella*, Aurivillius, Rhop. Aeth., p. 99 (1898).

= *braesia*, Em. M. B. Sharpe, Proc. Zool. Soc., p. 337 (1894).

BRITISH E. AFRICA (Taita, Taveta, Kibwezi, Campi ya Simba, Sokoke Forest, Zanzibar); GERMAN E. AFRICA (Irangi); ABYSSINIA (Kotscha).

A. pudorella detecta, subsp.

= *A. detecta*, Neave, Proc. Zool. Soc., p. 24, pl. i, f. 6, 6a (1910).

N.E. RHODESIA (Luangwa Valley); NYASSALAND (Chikala Boma); GERMAN E. AFRICA (Lindi).

A. pudorella pudorella. Pl. III, f. 7 (♂).

♂. Expanse 52-62 mm. F.-w. thinly scaled, salmon pink with a yellowish tinge. Costa from about middle to apex narrowly black. Apical and hind-marginal border narrowly black. At apex and to some extent along hind margin the internervular spaces are suffused with orange. Base slightly darkened. Black spots as follows:—One in cell at, or slightly beyond origin of nervule 2. A spot (sometimes double) on discocellulars. A discal row of 2 to 4 spots beyond cell in 6, 5, 4, and 3, lying nearly in a straight line at right angles to costa. Sometimes a dot near base of area 2. In area 1b a central and a subbasal spot, the latter sometimes wanting. H.-w. ground-colour as in f.-w. but more densely scaled. Somewhat blackened at base and having a narrow black hind-marginal border bearing indications of paler internervular marks. Black spots as on underside but often only faintly indicated.

Underside f.-w. as on upperside but almost devoid of scales. Two black spots on costa near base.

H.-w. pinkish ochreous, internervular spaces reddened at base. Hind-marginal border formed of moderately thick black arches on a fine black marginal line and enclosing internervular spots of pale greenish ochreous. Patches of slightly darker ground-colour between the nervules at inner edge of marginal border. Black spots as follows:—An outer row of nine, the first in 7 a little beyond origin of nervule 7, the second in 6 more distally placed, third in 5 still nearer margin, fourth near base of area 4, fifth in 3 nearer margin, sixth near base of 2, seventh in 1c nearer margin, eighth in 1b nearer base, ninth in 1a still nearer base. Some basal black in 9, cell, 1c, 1b, and 1a. A subbasal spot in 7, two spots in cell, the second over origin of nervule 2, one on discocellular at base of 5, a subbasal in 1c and beneath it a spot in 1b, and a subbasal in 1a.

Head black with a deep pink tuft between eyes, and two on collar. Thorax black with pink hairs. Basal half of abdomen black with pink lateral spots and transverse lines, remainder yellowish pink. Claws unequal.

♀. Expanse about 56 mm. Resembles ♂ but f.-w. suffused with brown at base, and h.-w. orange brown becoming paler

towards margin. F.-w. apical black and h.-w. hind-marginal border a little broader than in ♂.

Thorax and abdomen black above with white markings.

A. pudorella detecta, subsp.

♂. Expanse 48–54 mm. Closely resembles *A. caldarena*. Wings rather thinly scaled. F.-w. reddish ochreous to rusty red at base becoming distinctly paler beyond end of cell. A slight dusky suffusion at base and along costa, and a black apical tip 5 to 7 mm. broad, the inner edge of which is usually less well defined than in *caldarena*. The spots are rather variable and usually much reduced. One in cell above origin of 2, a black mark on upper part of discocellulars. Beyond cell a discal row of five (some often absent) in a straight line at right angles to costa. One in 2 near median, one beneath this in 1b, but nearer margin, and occasionally a subbasal spot in the same area, near median. In some examples traces of submarginal spots in 1b and 2.

H.-w. with a slight black basal suffusion and a narrow black hind-marginal border formed of a series of arches on a marginal line enclosing more or less distinct spots of the ground-colour. The inner edge of this border is often rather suffused. The spots of the h.-w. upperside correspond to those beneath, but those near base and inner margin are frequently only faintly indicated.

Underside f.-w. ground-colour as on upperside but thinly scaled and shiny. Apical black replaced by greyish ochreous. A black spot at base of costa, other spots as on upperside. H.-w. pinkish ochreous with a few reddish marks near base. Marginal border formed of black arches on a thin marginal line, enclosing whitish internervular spots. Black spots as follows:—Discal series, one in 7 about middle, one in 6 nearer margin, one in 5 still nearer margin, and *more distally placed than in caldarena*. One in 4 slightly removed from end of cell. One in 3 about midway between end of cell and marginal border, one in 2 touching median and 2, and *distinctly more proximally placed than in caldarena*. A spot in 1c nearer margin than that in 2. One in 1b on a level with that in 2. A spot in 8 near precostal, a subbasal in 7, two in cell, one at base of 5 on m.d.c., a basal and a subbasal in 1c, the latter contiguous with a spot in 1b, close to which is a spot in 1a. Also a subbasal spot in 1a, and some irregular black about the bases of the nervules.

Head black with a pale line between the eyes, and two tufts

on collar. Thorax black with red hairs, base of abdomen black with yellowish lateral spots, remainder pinkish ochreous.

♀. Dry season. Very like the ♂ but rather duller in colour. Spots and markings as in ♂. Abdomen black above with white lateral spots.

Wet season. Dusky ochreous to sepia, often with a translucent whitish discal area in the f.-w. Spots and markings as in dry season form.

As the form to which Aurivillius gave the name *pudorella* proves to be specifically identical with Neave's *detecta*, the latter must become a subspecies of the former. Probably *pudorella* is the ancestral form and *detecta* has become modified in its pattern in association with *A. caldarena*, which it so closely resembles. The ♂ and ♀ armatures of *detecta* and *caldarena* are very distinct.

61. *ACRAEA RHODESIANA*. Pl. II, f. 6 (♂).

Acraea rhodesiana, Wichgraf, Berlin Ent. Zeit., p. 240, pl. vi, f. 1, 2 (1909).

RHODESIA (Lofu R.).

♂. Expanse 54 mm. Wings apricot yellow. F.-w. with a slight dusky suffusion, distal half of costa black, apex black (4 mm. wide) hind margin narrowly black. Subapical area paler than ground-colour. Black spots as follows:—One in cell just beyond origin of 2, on end of cell a spot the greater part of which is beyond the discocellulars. A *very short distance beyond cell* a row of spots of which the first in 10 is markedly elongate, the second, third and fourth shorter but gradually increasing in length, the fifth in 3 separate and rather nearer margin. A spot in 2 near median, beneath it and slightly nearer margin a spot in 1b, and in the same area a very small spot close to median and just before origin of 2. H.-w. with a slight black suffusion and a black hind-marginal band 2 mm. wide with faint indications of paler internervular markings. Black spots corresponding with those beneath but those near inner margin faintly indicated.

Fringes rather conspicuously whitish.

Underside f.-w. pale pinkish ochreous with a still paler subapical patch. Apex pale sage green divided by black ends of nervules and internervular orange marks. Two black spots at base of costa, other spots as above. H.-w. pale pinkish ochreous. Base rose pink with some pale grey markings in cell and 1c. Hind margin bordered by a black line on which are black internervular arches enclosing pale sage green spots. Black spots as

follows:—Discal spots. One in 7 about middle, one in 6 nearer margin, and immediately beneath it or very slightly nearer margin, a spot in 5; a spot in 4 close to end of cell, one in 3 about 2 mm. from end of cell, one in 2 near median, one in 1c nearer margin, one in 1b on a level with that in 2.

A spot in 8 near precostal, two in cell, one in 5 on m.d.c. and a dot on l.d.c., a subbasal in 1c, and one in 1b rather more distally placed, and a small spot slightly beyond the middle of 1a. Some irregular black at base of wing and a basal black line on inner margin. Head and thorax black with some reddish hairs, base of abdomen black with white lateral spots, and segmental lines, remainder white with some yellow hairs at tip. Claws unequal.

The above description is from the cotype in the National Collection. It appears to resemble the figure accompanying Wichgraf's description, but all the figures on this plate are so poor that they are of little value.

The ♀ is described (*l. c.*) as having a smoky chocolate brown ground-colour, the pale subapical area being represented by a sharply defined white patch, somewhat suffused in area 3. The spot in f.-w. cell distinctly larger.

A specimen in the Oxford collection taken by Neave on the Lofu River, N.E. Rhodesia, agrees with the fig. and description of *rhodesiana* ♀ with the exception that the f.-w. subapical area is ochreous instead of white.

The locality given in the original description is merely "Rhodesia." The types are in Herr Wichgraf's collection, and there is a ♂ co-type in the London and Stockholm Collections.

62. *ACRAEA MIMA*. Pl. XII, f. 8.

Acraea mima, Neave, Proc. Zool. Soc., p. 22, pl. i, f. 8, 9 (1910);

Eltringham, Af. Mim. Butt. p. 39, pl. iii, f. 5 (1910).

N.E. RHODESIA (Serenje); CONGO (Katanga).

♂. Expanse 56–60 mm. F.-w. greyish-black with black costa and black apex. Base of costa and median powdered with orange brown. Area 1a, 1b, and sometimes 2 and lower half of cell, suffused with salmon orange. A conspicuous white discal bar about 3 mm. wide at costa in 10, 9, 6, 5, 4, and upper part of 3. In one example this white area is dusted with reddish scales. Black spots as follows:—One in cell slightly beyond origin of nervule 2. At end of cell an irregular spot the greater part of which is beyond the discocellulars. *A very short distance*

beyond the cell, a discal row of spots, of which the first in 10 is markedly elongated and extends further towards base than the rest; the second, third, and fourth in 6, 5, and 4 are contiguous and of gradually increasing length, the fifth in 3 separated and rather distinctly nearer margin. In 2 a large spot near median, two in 1b, of which one is beneath that in 2 and very slightly nearer margin, the other close to median just before origin of 2. H.-w. salmon-orange with a slight black basal suffusion, and a black marginal border 2 mm. wide bearing faint indications of paler internervular markings. Black spots corresponding to those on underside, those near inner margin faintly indicated. Fringes conspicuously whitish.

Underside f.-w. pale orange ochreous, rather dusky along costa and in median area. Costa, apex, and hind margin narrowly lined with black. Apical area greyish ochreous divided by the black ends of nervules and by broad orange internervular marks. Two spots near base of costa. Other spots and markings as above.

H.-w. pale orange ochreous, rose pink at base and central area rather paler. Hind margin bounded by a black line on which are rather flat, moderately heavy black arches enclosing pale yellowish-white spots. Black spots as follows. Discal spots. One in 7 about middle, one in 6 nearer margin, one in 5 still nearer margin, in 4 a spot touching l.d.c. and 5, a spot in 3 about 2 mm. from end of cell, one in 2 close to median, one in 1c rather more distally placed, one in 1b on a level with that in 2.

A spot in 8 a short distance from precostal, two in cell, one at base of 5 on m.d.c., a large spot in 1c near origin of 2, close to this but more distally placed a spot in 1b, and 1a, a basal spot in 1a, and some irregular black at base of wing.

Head black with pale orange marks between and behind the eyes, collar with two red tufts, thorax black with red hairs and lateral tufts. Base of abdomen black with lateral white spots, remainder yellowish white. Claws unequal.

♀. Expanse 44-58 mm. Resembles the ♂ but ground-colour duller. Abdomen black above with white lateral spots.

In the arrangement of the spots *A. mima* is almost the same as *A. rhodesiana* of Wichgraf, but the latter lacks the heavy black suffusion in the f.-w. and the subapical area is only slightly paler than the ground-colour instead of white as in *mima*. Also the reddish yellow colour of *rhodesiana* is of a paler tint.

In Mr. H. Druce's collection there is a beautiful ♂ example of this species which differs somewhat from Neave's specimens. The greyish black colour in f.-w. begins only at about 6 mm. from base and from thence as far as the discal spots it is quite narrow, extending only into upper part of end of cell. The subapical white bar is rather narrow and very sharply defined. The apical black extends barely as far as nervule 3, with a central marginal streak in area 2. The dark marginal border of h.-w. is very narrow and somewhat obsolescent towards anal angle. The terminal half of abdomen is white. The specimen was taken in August 1903, and is labelled Lowombwa River. As Neave's specimens were taken in December the difference in colouring may be seasonal.

As Neave has indicated, *A. mima* is nearly allied to Wichgraf's *rhodesiana*, and I consider it possible that they may ultimately prove to be forms of the same species. Unfortunately I have not had an opportunity of examining the genitalia of the latter species. The armature of *A. mima* is, as the figure shows, quite distinctive.

63. *ACRAEA BRAESIA*. Pl. XI, f. 7.

Acraea braesia, Godman, Proc. Zool. Soc., p. 538 (Oct. 1885); Smith and Kirby, Rhop. Exot., 9. (*Acraea*), p. 3, pl. i, f. 7 (1889); Butler, Proc. Zool. Soc., p. 401 (1898); Aurivillius, Rhop., Aeth. p. 99 (1898).

= *leucosoma*, Staudinger, Exot. Schmett., i, p. 84 (Nov. 1885).

GERMAN E. AFRICA (Kilimandjaro, Dar-es-Salaam, Witu, Massaland, Usambara); BRITISH E. AFRICA (Mori River, Ukamba, L. Baringo, Voi River, Melindi, Kikuyu, Kaya Kauma, Taveta); SOMALILAND (Berbera); ABYSSINIA (Gurgura-Gololota).

f. *regalis*.

Oberthür (*A. regalis*), Etud. d'Ent., 17, p. 20, pl. ii, f. 20 (1893); Holland, Ann. Nat. Hist., 6, 12, p. 249 (1893); Aurivillius, Rhop. Aeth., p. 99 (1898).

GERMAN E. AFRICA (Kilimandjaro, Dar-es-Salaam); BRITISH E. AFRICA (Mombasa, Taita).

A. braesia braesia.

♂. Expanse 56-64 mm. F.-w. narrow and elongated. Translucent, the base flushed with rose brown shading to pink, the outer half transparent grey. Costa, apex, and hind margin narrowly

black. At inner edge of apical and marginal black a series of orange spots large at apex and becoming smaller towards hind angle. Neuration black. Black spots as follows:—One in cell over origin of nervule 2. A double spot on discocellulars. Beyond end of cell an oblique band of spots the first (sometimes wanting in 10), the second, third, and fourth in 6, 5, and 4, in a straight line at right angles to costa, the fifth in 3 slightly nearer margin. A spot near base of area 2 and beneath it a spot in 1b. In the latter area a dot midway between base and origin of nervule 2. H.-w. rosy pink slightly blackened at base, and having a black hind-marginal border bearing indications of slightly paler internervular marks, its inner edge slightly sinuate. Black spots corresponding to those beneath but often only faintly indicated.

Underside f.-w. almost devoid of scales except at base, on spots, and on apex and hind margin. Otherwise as above.

H.-w. dull pinkish ochreous with a few reddish marks at base. Marginal border formed of rather heavy black arches on a fine black marginal line enclosing pale dull ochreous spots. Black spots as follows:—An outer series of nine. The first in 7 just beyond origin of nervule 7, second in 6 nearer margin, third in 5 still more distal, fourth in 4 touching cell, fifth in 3 a short distance from its base, sixth in 2 near its base, seventh in 1c nearer margin, eighth in 1b nearer base, ninth small, in 1a, still nearer base. One in 9, one in 8, a subbasal in 7, two in cell (the second just before origin of nervule 2), a basal and a subbasal in 1c and 1b, and a subbasal in 1a. A spot at base of area 5 on discocellular.

Head black with a whitish tuft between eyes and two on collar. Thorax black with a few whitish marks, basal half of abdomen black above with yellowish lateral spots, remainder whitish with a yellow terminal tuft. Claws unequal.

♀. Expanse 60–64 mm. F.-w. slightly more rounded at apex than in ♂. Colouring varies from a condition resembling the ♂ but slightly duller, to one in which the pink areas are replaced by grey, the outer half of h.-w. being white. Spots as in ♂. Abdomen entirely black above with large white lateral spots.

I have seen but few examples from Somaliland, but these differ in the following points:—

♂. F.-w. almost entirely transparent except for the spots and marginal and apical black and orange. The spot in area 3 is absent. The h.-w. is rose pink, sometimes with a slight tendency to white suffusion.

♀. F.-w. entirely transparent as in male. Submarginal orange spots only indicated. Spots in 3 and 2 absent or very faint. H.-w. white with black basal suffusion. Marginal border rather broader than in other forms. Spots as in typical examples.

Whether Somaliland specimens constantly differ as above described I am unable at present to say.

A. braesia f. *regalis*.

♂. Differs from typical examples in having the f.-w. fully scaled on the upperside. Deep brick red as far as the discal spots. Just beyond these a pink subapical band followed by a band of grey broad at nervule 6 and tapering to nervule 3. Orange submarginal spots large and confluent. H.-w. brick red with the spots only faintly indicated.

♀. The few ♀ ♀ I have seen resemble the ♂ though rather duller and paler.

A. braesia is a distinct and easily recognisable species. There is a little variation in the shape of the ♂ claspers, and at one time I thought the differences were sufficiently constant to warrant the separation of the *regalis* form as a species, but a series of preparations shows that whilst there is a general tendency for the armature of *regalis* to differ slightly from that of *braesia* such differences are not constant. The ♀ plates are the same. The *regalis* form may be regarded as being on the verge of separating off as a species though at present it occurs in company with the type form and is probably syngamic therewith.

64. *ACRAEA DOUBLEDAYI*. Pl. XI, f. 6.

Acraea doubledayi, Guérin, Lefebvre, Voy. Abyss., 6, p. 378 (1849); Reiche, Ferret and Galinier, Voy. Abyss., pl. 33, f. 1, 2 (1849); Aurivillius, Rhop. Aeth., p. 99 (1898).

= *gaekwari*, Em. M. B. Sharpe, Entomologist, 34, Suppl., p. 2 (1901).

ABYSSINIA; SOMALILAND.

♀ f. *candida*, f. nov.

NYAM NYAM.

A. doubledayi sykesi, subsp.

Em. M. B. Sharpe (*A. sykesi*), Entomologist, p. 279 (1902).

= *mystica*, Neave, Novit. Zool. xi, p. 327 (1904).

UGANDA (Entebbe, Wadelai); BRITISH E. AFRICA (Kumi, L. Salisbury); GERMAN E. AFRICA (Bukoba).

A. doubledayi arabica, subsp. nov.

S. ARABIA (Azvaki Ravine).

A. doubledayi doubledayi. Pl. II, f. 3 (♂).

♂. Expanse about 64 mm. E.-w. thinly scaled and rather translucent, brick red with black spots. Costa and base somewhat suffused with blackish. A black marginal band 6 mm. wide at apex becoming narrower towards hind angle, having its inner edge thinly scaled, and bearing a submarginal row of deep orange spots, the last of these (in 1b) often merged into the ground-colour. From each of these spots is given off inwardly a short black internervular ray (doubled in 1b). In areas 3, 4, 5, 6, 9 and 10 between the marginal border and the discal row of spots a white translucent band very sparsely scaled. Black spots as follows:—A large spot in cell above origin of 2 and rarely a trace of a second spot nearer base. A spot on the upper part of the discocellulars. A discal row of five confluent spots (the fifth sometimes separate), the first in 10 rather nearer base than the others and the next three almost in a straight line. A large spot in 2 its upper edge close to origin of nervule 3. Immediately beneath this a large spot in 1b, and in the same area a smaller round spot below median just before origin of 2. H.-w. brick red with some black basal suffusion. A black hind-marginal border about 2 mm. wide having a very distinct but *markedly undulating* inner edge, and very slightly paler internervular marks. Black spots as on underside but those near inner margin often only faintly indicated.

Underside f.-w. The greater part of median area very sparsely scaled and shining. Spots as on upperside with a basal and a subbasal spot on costa. Costa pale ochreous. Apex and hind margin pale ochreous with orange internervular spots each of the latter with a short black internervular ray. A narrow black line round apex and hind margin.

H.-w. pinkish ochreous with a greenish ochreous marginal band bounded by a narrow black marginal line, and broken by narrow black internervular arches. Just inside the latter a row of orange ochreous internervular marks. Basal and median area with some rose-pink internervular marks. Black spots of medium size as follows:—A discal row of nine, the first three in 7, 6 and 5, each nearer the margin than the last, the fourth in 4 nearer base, fifth in 3 midway between end of cell and marginal border, the sixth in 2 just below origin of 3, the seventh and eighth in 1c and 1b, nearly in a straight line

with the sixth, the ninth in 1a nearer base. A spot in 8 near precostal, a subbasal in 7, two in cell and one on middle discocellular, a subbasal in 1c, 1b, and 1a, that in 1b nearer margin than the other two. Some irregular black at base of nervures.

Head black with brown hairs, and tufts on collar, thorax and base of abdomen black, the latter with small pinkish lateral spots, remainder pinkish ochreous. Claws unequal.

♀ resembles the ♂ in size and markings but the ground-colour varies from dull pink to dull smoky ochreous. The underside of f.-w. almost devoid of scales. The abdomen black above with white lateral spots, and sometimes the last three or four segments entirely white above.

A. doubledayi ♀ f. *candida*, f. nov.

Represented by an example in the Staudinger collection from Nyam Nyam. The ground-colour is white, the form bearing the same kind of relation to the type as does *A. encedon* f. *lycia* to *A. encedon encedon*.

A. doubledayi sykesi, subsp.

Differs from typical *doubledayi* in having the f.-w. of a yellower colour. The apical and marginal black is confined to the ends of the nervules and a thin marginal line, and the translucent patch is almost or entirely absent. The ground-colour of the h.-w. margin on the underside is white.

The ♀ is a more tawny brown and the f.-w. spots somewhat larger.

The type of *mystica*, Neave, has rather redder h.-w. than the other examples I have seen. It is a somewhat worn example, and its identity with the *sykesi* form is only evident on careful comparison with a series of the latter.

A. doubledayi arabica, subsp. Pl. II, f. 2 (♂).

Differs from the typical form in having the wings much more heavily scaled, but with hardly any basal suffusion. The translucent patch is often thickly scaled with dusky white (white in ♀). The ground-colour is usually a deeper brick red. In some examples there is a small black streak in f.-w. cell just before the large spot, and sometimes one in 1b just before the subbasal spot. The spots tend to be larger and the terminal half of the abdomen is white with some yellow scales at the tip. The underside is more richly coloured than in the typical form and in some examples the basal costal spots are

wanting. The ♀ resembles the ♂ but the ground-colour is dull chocolate brown, and the abdomen is black with large white lateral spots and white segmental rings.

Much confusion has arisen over this species, doubtless owing to its rarity and the comparative inaccessibility of the original figure. I have therefore prepared a figure of the ♂ from an example in the Tring Museum which agrees with the figure given by Reiche (*l. c.*), and have also illustrated the Arabian subspecies which I found in the same collection. Four ♂♂ and one ♀ of this form were taken in the Azvaki Ravine in Southern Arabia. The *A. doubledayi* described in Trimen's S. African Butterflies is *A. oncaea*, and hence many examples of the latter species are labelled *doubledayi* in collections.

65. *ACRAEA ONCAEA*. Pl. XII, f. 5. Pl. XV, f. 25.

Acraea oncaea, Hoppfer, Monatsb. Ak. Wiss. Berlin, p. 640 (1855); Peters Reise Ins., p. 375, pl. 24, f. 5-8 (1862); Staudinger, Exot. Schmett., i, p. 84 (1885); Aurivillius, Rhop. Aeth., p. 100 (1898); Voeltzkow Reise Lep., p. 315 (1909); Neave, Proc. Zool. Soc., p. 25 (1910).

= *doubledayi*, Trimen, S. Af. Butt., i, p. 147 (1887); Butler, Proc. Zool. Soc., pp. 53, 191 (1898); Dixey, Proc. Zool. Soc., p. 11 (1900).

CONGO (Kassai); NYASSALAND (Zomba); MANICALAND; PORTUGUESE E. AFRICA; NATAL; TRANSVAAL; CAPE COLONY; RHODESIA; GERMAN E. AFRICA (Mafia I., Lindi, Dar-es-Salaam); BRITISH E. AFRICA; ABYSSINIA; SOMALILAND.

♀ f. *alboradiata*, Suffert, Iris, p. 28 (1904).

♀ f. *modesta*, Suffert, *l. c.*

♀ f. *obscura*, Suffert, *l. c.*

♀ f. *defasciata*, Suffert, *l. c.*, p. 29.

♂ f. *caoncius*, Suffert, *l. c.*, p. 27.

These forms are not confined to any particular locality.

A. oncaea liacea, subsp., nov.

= *caecilia liacea*, Suffert, Iris, p. 29 (1904).

GERMAN E. AFRICA (Usandawi).

A. oncaea oncaea.

♂. Expanse 50-60 mm. Wings dull orange red to dull ochreous. F.-w. costa from middle to apex narrowly black. At apex there is a narrow black tip, sometimes as much as 3 mm. wide but always quite recognisable. At about nervule 4

or 5 the black tapers to a narrow marginal line extending to the hind angle. The median area is often rather thinly scaled but does not become translucent. A slight dusky suffusion at base. The apical and hind-marginal area shows a tendency to orange between the nervules, and in the internervular spaces are black rays sometimes as far as area 2. Ends of nervules black. There is a submarginal row of black spots parallel to the hind margin. These vary in number. In very "dry" examples there may only be a minute spot in 1b and 2, while wet season specimens may have a well-developed row of four spots in 1b, 2, 3, and 4. Other spots as follows:—One in cell above origin of 2, sometimes preceded by a faint longitudinal streak. A double spot on upper part of discocellulars. A discal row, when all present five in number, in 10, 6, 5, 4, and 3, but that in 6 often minute or absent. These spots lie roughly in a straight line nearly at right angles to the costa; the spot in 3 well separated from the others. In area 2 a spot near the meridian. In area 1b a subbasal and a median spot.

H.-w. A slight black suffusion at base and a hind-marginal border varying in appearance from continuous black about 2 mm. wide to a row of faintly indicated dark internervular arches standing on a thin marginal line. The inner edge of this border is always regularly arched between the nervules. Black spots as on underside, those near inner margin often very faint, and the discal spots often smaller than those below.

Underside. F.-w. a pale replica of the upperside but without the apical black. Two small black spots near base of costa.

H.-w. Pinkish ochreous with internervular marks of a rather deeper pink in median and basal areas. Hind-marginal border bright ochreous with a thin marginal line and narrow black internervular arches. Black spots as follows:—A discal row of eight. The first three in 7, 6, and 5, approximately parallel to margin, the fourth in 4 close to end of cell, the fifth in 3 some distance from end of cell, but not in the middle of the area, the sixth in 2 close to median, the seventh in 1c nearer margin, and the eighth in 1b nearer base. A spot in 8 near precostal, a subbasal in 7, two in cell close together near middle, one at base of area 5 touching m.d.c. and 6. A large subbasal spot in 1c, and close to it a spot in 1b, and 1a, all three in a straight line, a subbasal spot in 1a and some irregular black about bases of nervures.

Head black with brown hairs, and tufts on collar. Thorax black with brown hairs. Base of abdomen black with orange lateral spots, remainder orange. Claws unequal.

Some fine examples of the ♂ *oncaea* taken by Neave on Chirui I., L. Bangweolo, have the f.-w. dull rosy red, and the space between the discal spots and the apical black is grey. The inner edge of the apical black is much suffused and broken up by submarginal orange spots each of which is divided by a black ray. The h.-w. is bright red with a rosy tinge, and bears the usual black spots. The h.-w. underside at base and inner margin is deep rose pink.

Suffert describes under the name *caoncius* (*l. c.*) a form in which the f.-w. apical black is no wider than the marginal black.

♀. Expanse 48–64 mm. Extremely variable. Whilst in a long series all kinds of intermediates may be found, the following may be specially noted :—

- (1) Dry season. F.-w. base to discal row of spots reddish chocolate. Beyond the spots a white band in 10, 9, 6, 5, 4, and 3, about 4 mm. wide. Between the outer edge of this and the apical black, dusky orange. H.-w. reddish chocolate with a pink patch beyond cell in 4, 3, 2, and 1c. Spots, etc., as in ♂.

Underside. F.-w. paler and duller. White area replaced by creamy yellow, apex pale ochreous with orange internervular marks.

H.-w. whitish with rose pink marks beyond discal spots and at base and inner margin. . . . = *f. obscura*, Suffert.

- (2) Dry season. Similar to (1) but without the white patch in f.-w. . . . = *f. defasciata*, Suffert.

- (3) Wet season. Resembles ♂ but the wings are greyish black, and f.-w. has a white patch as in (1). H.-w. marginal black, broader than in ♂ and inner edge suffused. Little or no basal black suffusion. Underside similar but paler. This form agrees with figure of Hoppfer's type.

- (4) Wet season. Resembles (3) but the nervures of h.-w. dusted with white . . . = *f. alboradiata*, Suffert.

- (5) Wet season. Resembles (3) but h.-w. with a large white median patch . . . = *f. modesta*, Suffert.

- (6) Resembles ♂ but wings are dull ochreous grey. No white markings. Underside similar but h.-w. dark ochreous.

In all the ♀ forms the abdomen is black above with whitish or yellowish lateral spots.

f. liacea.

This form was described by Suffert as a subspecies of *caecilia*, but having examined the types I find it belongs to the present

species. In the ♂ the h.-w. black margin is rather ill-defined inwardly and beneath has heavy black arches enclosing whitish spots. The ♀ is like the ♂ but has the h.-w. margin broader, and more suffused, and is without a white subapical bar in f.-w. Examples taken by Neave in the Iringa District, German E. Africa, in December (wet season) show that the ♀ of this subspecies does not become black in the wet season, the ground-colour being much the same as in the ♂.

A curious aberration of the ♀ was taken by Neave in the Luangwa Valley in Aug. 1910. The ground-colouring resembles that of the first form above described, except that the apical black and the subapical white are contiguous. The spots are reduced to one (large) in middle of f.-w. cell, and a black mark on discocellulars. In h.-w. there is a spot in cell and one at base of 6 and 5. On underside the h.-w. marginal border consists merely of a thin double black line broken by a black mark on end of each nervule.

A. oncaea is an abundant species and Neave records it as common at all seasons in the Luangwa Valley. The male armature is quite distinct in form. The species has been much confused with *A. doubledayi*, Guér., from which, however, it is quite distinct.

66. *ACRAEA EQUATORIALIS*. Pl. XII, f. 6. Pl. XV, f. 28.

Acraea equatorialis.

= *A. doubledayi equatorialis*, Neave, Novit. Zool., 11. p. 327 (1904); Eltringham, Novit. Zool., 18, p. 151, note (1911).

BRITISH E. AFRICA (Kisumu).

A. equatorialis anaemia, subsp. nov.

= *A. doubledayi equatorialis*, Aurivillius, Sjöstedt's Exped., p. 4 (1910).

BRITISH E. AFRICA (Kikuyu Escarpment, Campi-ya-Simba, Rabai, Zanzibar, Pemba I.); GERMAN E. AFRICA (Kilimandjaro).

A. equatorialis equatorialis. Pl. II, f. 10 (♂), f. 11 (♀).

♂. Expanse 46–48 mm. Wings rather lightly scaled, delicate pinkish ochreous. Costa, apex, and hind margin very narrowly black, slightly broader at apex. Just inside this black border, a narrow band of orange divided by the black ends of nervules, and followed inwardly by a grey area bearing black internervular rays. Black spots as follows:—One in cell at or just before origin of 2, one on upper part of discocellulars, a row of five beyond cell, the first in 10, often very small or obsolescent,
TRANS. ENT. SOC. LOND. 1912.—PART I. (JULY) N

the second, third, and fourth in 6, 5, and 4 further from end of cell and in a straight line at right angles to costa, fifth in 3, separate and rather nearer margin. A spot in 2 just under origin of 3, beneath this and slightly nearer base, a spot in 1b, and in same area a subbasal spot just beyond middle of first section of median. Sometimes a slight black basal suffusion in 1b.

H.-w. with a slight black basal suffusion, and a narrow black hind-marginal line on which are rather ill-defined flat internervular arches enclosing small marks of the ground-colour. Black spots corresponding to those beneath but often rather faintly indicated near inner margin.

Underside. F.-w. very thinly scaled and shiny. Usually two black spots at base of costa. Otherwise as above. H.-w. pale pinkish ochreous with a few pink marks at base. Hind-marginal border as above but very clearly traced, and enclosed spots rather yellower than ground-colour. Black spots as follows:—Two in 7 near middle and rather close together, one in 6 nearer margin and one in 5 still nearer margin, in 4 a spot about 1 mm. from end of cell, and beneath it but nearer margin, a spot in 3. One in 2 close to median, beneath it and nearer margin a spot in 1c, and a spot in 1b on a level with that in 2. A minute spot in 8 near precostal, two in cell, a basal and a subbasal in 1c, close to the latter a spot in 1b followed by a spot in 1a, another larger spot in same area nearer base. A small black mark in area 9. *Very rarely* a minute black dot at base of 5 on m.d.c. Fringes pale ochreous.

Head and thorax black with ochreous tufts. Base of abdomen black with pale lateral spots, remainder creamy white. Claws unequal.

♀. Expanse 42–48 mm.

f. 1. Like the ♂ but wings more rounded, and ground-colour duller. H.-w. marginal black with little indication of pale internervular marks, and on the underside enclosing whitish spots. Abdomen black above with white segmental lines and lateral spots.

f. 2. Like f. 1, but f.-w. ground-colour pale grey with indications of a white subapical bar beyond the discal spots. H.-w. white with a dusky suffusion at base, costa, and along inner edge of marginal border. Inner margin yellowish.

Intermediates between these two ♀ forms occur, and the difference does not appear to be seasonal, as all the 38

examples in the Oxford collection were taken in November to January by Mr. Wiggins.

The species is quite distinct and is not a form of *double-dayi*, though some of the grey ♀♀ are not unlike the ♀ of that species.

A. equatorialis anaemia, subsp. Pl. V, f. 5 (♂).

♂. Expanse 50–60 mm. Differs from typical *equatorialis* in having the wings more sparsely scaled and the ground-colour paler and more delicate. Both wings have a brownish basal flush and submarginal spots are frequently present in f.-w. 1b, and 2.

♀ resembles ♂ but wings are more rounded and abdomen is black with white lateral spots.

67. *ACRAEA ELLA*. Pl. II, f. 7 (♂). Pl. XI, f. 8.

Acraea ella, Eltringham, Novit. Zool., xviii, p. 151 (1911).
ANGOLA (Bihé).

♂. Expanse 50–60 mm. Wings dull to golden or pinkish ochreous. F.-w. with a slight dusky basal suffusion, costa, apex, and hind margin very narrowly black, rather broader at apex. Apical area usually rather richer yellow than remainder of wing. A submarginal row of internervular black rays which rarely reach the margin. Nervule ends black. Black spots as follows:—In cell a spot very slightly beyond origin of 2. A double spot on upper part of discocellulars. Beyond cell a discal row of spots of which the first in 10 is rather nearer base than the others, and usually elongate, the second, third and fourth in 6, 5, and 4 nearly in a straight line at right angles to costa, the fifth separate and nearly in the middle of area 3. A spot in 2 just below origin of 3, and beneath this but slightly nearer margin a spot in 1b, and in same area a spot (sometimes doubled) about 2 mm. before origin of 2.

H.-w. with some black basal suffusion, and a hind-marginal border formed by a narrow black marginal line on which are rather flat, not always clearly defined, internervular arches enclosing spots of the ground-colour. Black spots corresponding to those on underside but usually only faintly indicated near inner margin.

Underside f.-w. like the upperside but without basal suffusion, paler, and with two spots at base of costa. H.-w. paler than on upperside, base, inner margin, and area 1c splashed with pink. Marginal border as above but much more clearly defined. Black spots as follows:—Discal spots, one in 7 about middle, one in 6 about 3 mm. nearer to margin. Beneath this and slightly nearer

margin a spot in 5 (absent in three examples). In 4 a spot about 1 mm. from end of cell, a spot in 3, 2 mm. from end of cell, and one in 2 not very close to median. A spot in 1c, 3 mm. from margin, and one in 1b rather nearer base. A spot in 8 near precostal, a subbasal in 7, two in cell, one at base of 5 on m.d.c., a basal and a subbasal in 1c, and immediately below the latter a spot in 1b and 1a, also a subbasal in 1a. Some irregular black at base of wing.

Head and thorax black, with reddish tufts and hairs, base of abdomen black with whitish lateral spots, remainder white to yellowish. Claws unequal.

♀ resembles ♂ but ground-colour rather more dusky ochreous.

This species is apparently very closely allied to *equatorialis*. It may be distinguished from the latter by its larger average size, and by the fact that the discal spot in f.-w. 1b is usually slightly more distally placed than that in 2, whereas in *equatorialis* this spot is slightly more proximally placed. Also the spot in h.-w. at base of area 5 is well developed, and is rarely indicated in *equatorialis*. Further the structure of the claspers in the male armature is slightly different and the penis is longer and much more slender. The chitinous plate in the female of *A. ella* is of quite different structure, having a bifid process on its anterior edge, and the aperture is much smaller.

68. *ACRAEA AXINA*. Pl. XII, f. 7.

Acraea axina, Westwood, Oates, Matabeleland, p. 344, pl. F, f. 5, 6 (1881); *l. c.*, Ed. 2, p. 352, pl. 6, f. 5, 6 (1889); Trimen, Proc. Zool. Soc., p. 66 (1891); *l. c.*, p. 26 (1894); Aurivillius, Rhop. Aeth., p. 99 (1898); Butler, Proc. Zool. Soc., p. 905 (1898); Neave, Proc. Zool. Soc., p. 25 (1910). = *doubledayi*, var., Trimen, S. Af. Butt., 1, p. 147 (1887).

ANGOLA (Bihé, Benguella); DAMARALAND; MANICALAND; MASHONALAND; TRANSVAAL; PORTUGUESE E. AFRICA (Delagoa B., Tete); NYASSALAND (Blantyre); RHODESIA (Ft. Jameson, Alala Plateau).

♂. Expanse 36–48 mm. Dry season form. Wings rosy ochreous with a brownish basal and costal suffusion. Costa from middle to apex narrowly black. Hind margin black, 1 mm. broad, slightly narrowing towards hind angle. Apical area orange ochreous, the ends of nervules black, and with black or brownish internervular rays. Black spots as follows:—A

large spot in cell above origin of 2, a spot on upper part of discocellulars. A discal row of five, the first four (in 10, 6, 5, and 4) nearly in a straight line and confluent, the fifth smaller and separate. A spot in 2 near median, beneath it and rather nearer margin a spot in 1b, and a second in the same area near the base. H.-w. with a slight blackish brown suffusion, and a black sharply defined marginal border with faint indications of paler internervular markings. Spots small and as on underside. Fringes rather conspicuously whitish.

Underside, f.-w. with one or two subbasal costal spots. Ground-colour paler than above. Apical area ochreous with orange internervular marks. Other markings as on upper-side but marginal black narrower. H.-w. pale ochreous with rose pink internervular marks. Hind margin border formed by moderately heavy black arches and a very narrow black marginal line enclosing greenish ochreous internervular spots. Black spots as follows:—A discal row of eight, the first three in 7, 6, and 5 each nearer margin than the last (the third often absent in dry season specimens), the fourth in a line with the second at right angles to the costa, the fifth in 3, about midway between end of cell and marginal border, the sixth in 2 near median, the seventh and eighth in 1c and 1b. Of the last three that in 1c is rather nearer margin than the others. A spot in 8 near precostal, a subbasal in 7, one spot (very rarely two) in cell, one on middle discocellular, one in 1c, 1b, and 1a all in a straight line, and a basal spot in 1a.

Head black with brown tufts between eyes and on collar, thorax black with a few brown hairs, basal half of abdomen black with orange lateral spots, remainder orange.

Wet season form. Ground-colour more yellowish, spots larger, basal suffusion broader, apical and marginal black broader in both wings. F.-w. internervular rays blacker.

♀. Expanse 48–52 mm. Dry season form very like ♂ but ground-colour of f.-w. more dusky. Abdomen black above with yellowish lateral spots. Wet season form, also like ♂ but ground-colour dull ochreous to pale sepia. Just beyond f.-w. discal spots is an indication of a whitish subapical patch.

Though quite a distinct species, *A. axina* closely resembles a small specimen of *A. oncaea*. It may be distinguished from the latter by the absence of sub-marginal spots in 1b and 2 in f.-w., by its consistently much smaller size, and by the usually sharply defined black border in the h.-w.

There is in the Joicey collection a curious aberration of this species. It is a ♂ from Ft. Chicquaqua, Mashonaland. There is a spot in the f.-w. cell followed by one in the discocellulars, and three subapical spots. The h.-w. has one spot only, that on the discocellulars. The h.-w. hind-marginal border is black and rather deeply edentate between the nervules, and bears indications of paler internervular marginal spots.

69. *ACRAEA CAECILIA*. Pl. XI, f. 2.

Acraea caecilia, Fabricius, (*Pap.*) Spec. Ins., 2, p. 34 (1781); Godart, (*A*) Enc. Méth., 9, p. 235 (1819); Godman, Proc. Zool. Soc., p. 221 (1884); Karsch, Berl. Ent. Zeit., 38, p. 194 (1893); Carpenter, Proc. R. S. Dub. (2), 8, p. 305 (1895); Aurivillius, Rhop. Aeth., p. 100 (1898); Ann. Mus. Genov., p. 10 (1910).

= *bendis*; Hübner, Verz., p. 27 (1816).

SENEGAL; S. LEONE; GOLD COAST; LAGOS; ASHANTI; TOGOLAND; NIGERIA; NUBIA; UGANDA (Uryoro, Pt. Alice, Entebbe, Bulamwezi); BRITISH E. AFRICA (L. Baringo, Kikuyu, Mori R., Kiboko R., Kibaoni); GERMAN E. AFRICA (Ukerewe I., Tabora); SOMALILAND (Sheik Hussein, Abulcassim); ABYSSINIA (Mole R.); FRENCH SUDÂN (Bammako to Wagaduga).

♀. f. *hypatia*, Drury, (*Pap.*) Ill. Exot. Ins., 3, p. 16, pl. 13, f. 1, 2 (1782); Fabricius, Ent. Syst., 3, p. 163 (1793); Godart, (*A*) Enc. Méth., 9, p. 232 (1819).

S. LEONE.

♀. f. *artemisa*, Stoll, (*Pap.*) Cramer Suppl., p. 123, pl. 25, f. 4, 4 d. (1790).

? loc.

A. caecilia pudora, subsp.

Aurivillius, Sjöstedt's Exp. n. Kilimandjaro, p. 4 (1910).

GERMAN E. AFRICA (Usandowi, Kilimandjaro); BRITISH E. AFRICA (Machakos, Kikuyu).

f. *umbrina*, Aurivillius *l. c.* (1910).

KILIMANDJARO.

A. caecilia caecilia.

♂. Expanse 56–70 mm. Ground-colour pale ochreous pink to pale salmon pink. F.-w. with a black or brown basal suffusion and a brown dusting of scales along the costa. Apex black about 4 mm. wide, the inner edge much suffused in outline, the black continued as a narrow tapering line along the margin

to the hind angle. Subapical and submarginal area inclining to orange ochreous between the nervules, and in areas 6, 5, 4, 3, and 2 sometimes a grey ground-colour with submarginal orange spots and black internervular rays. Black spots as follows:—One in cell above origin of 2, and a double spot on upper part of end of cell. A discal row of five in 10, 6, 5, 4, and 3, the first often much elongated, and rather nearer base, the next three in an almost straight line and contiguous, the fifth subcrescentic and in the middle of area 3. A spot in 2 near median, and immediately beneath it a spot in 1b, also a subbasal spot in 1b near median. A submarginal row of spots parallel to hind margin, the first in 4 (sometimes absent), the second in 3 very close to the fifth discal spot (also sometimes absent in ♀).

H.-w. with a black or brownish black basal suffusion and a well-defined hind-marginal black border usually with traces of paler internervular marks. The discal and basal black spots are rather variable, often faintly indicated, and most easily observed on the underside.

Underside a paler replica of the upper, but without basal suffusion. F.-w., two basal black spots on the costa, and apical black of much less extent. H.-w., black marginal border bearing seven rounded whitish spots. Black spots as follows:—An irregular discal row of nine, the first about middle of area 7, the second about middle of 6, the third (often minute or absent) slightly nearer margin, the fourth touching end of cell, the fifth just before middle of area 3, the sixth in 2 close to median, the seventh in 1c nearer margin, the eighth in 1b crescentic and nearer base, the ninth in 1a and still nearer base. A spot in 8 near precostal, usually two in cell close together, one at base of 5 touching m.d.c. A large subbasal in 1c, a small ditto in 1b, nearer margin, and a medium-sized subbasal in 1a close to that in 1c. Some black at base of nervures enclosing two white dots.

Head black with a yellow tuft between the eyes and two on the collar. Thorax black with reddish hairs, and two anterior, two dorsal, and two posterior pale marks. Abdomen black at base with pale lateral spots, remainder whitish. Claws unequal.

♀. Expanse 56–64 mm. Varies from pale salmon pink to white. F.-w. with black basal suffusion, dusted with brownish along costa, apex black inwardly suffused with yellow and nearly reaching the discal spots. Black spots as in ♂. H.-w. with a black basal suffusion and a broad (about 4 mm. wide) black hind-marginal border, its inner edge suffused with brownish.

Underside paler, marked as in ♂, much less apical black than above, and area between this and discal spots grey with

orange internervular marks. H.-w. pinkish at base and with seven large rounded pinkish or yellowish white spots on the marginal black. Thorax and abdomen black with white spots, the abdomen also segmented with narrow white lines.

A. caecilia ♀ f. *artemisa*.

This form appears to be a rare aberration in which the black markings, especially those of f.-w. apex and both hind margins, are exceptionally heavy. I know it only from Stoll's figure; though occasional Western examples show an unusual breadth of the h.-w. border.

A. caecilia ♀ f. *hypatia*.

For some time I was of opinion that Drury's figure of *hypatia* was too highly coloured, but I have now seen examples of *caecilia* ♀ which are quite as deeply tinted. The f.-w. is tawny ochreous and the h.-w. deep pink. The f.-w. apical and marginal black is narrow and well defined, resembling that in Eastern examples. We may therefore preserve Drury's name for this form. A specimen is in the Tring collection and bears the label Mohoroni.

A. caecilia *pudora*.

To the Eastern subspecies of *caecilia* must be assigned the name given by Aurivillius (*l. c.*) to what he regarded as the dry season form of Suffert's "*caecilia liacea*." The latter is however not *caecilia* at all, but a form of *oncaea*. *A. caecilia pudora* differs from more Western examples in having the f.-w. apical black much narrower and more sharply defined. The spot in h.-w. area 5 is usually well developed.

A. caecilia f. *umbrina*, Auriv.

On the f.-w. a dull grey semitransparent submarginal band between nervules 2 and 5-6.

A. caecilia exhibits little seasonal dimorphism. The wet season ♂♂ are pinker and more heavily spotted, and the ♀♀ have a whiter ground-colour and heavier black markings. One Abyssinian example I have seen is of the typical form and another is intermediate to *pudora*. The species is nearly allied to *A. caldarena* and there is little difference in the respective ♂ armatures.

70. *ACRAEA* MARNOIS. Pl. XI, f. 4.

Acraea marnois, Rogenhofer, Ann. Mus. Wien, 4, p. 552, pl. 23, f. 7 (1889); Aurivillius (*oncaea* var.), Rhop. Aeth., p. 100 (1898).

SUDÂN (Bahr-el-Seraf), "V. NYANZA."

♂ Expanse 50-56 mm. Wings rich ochre yellow and somewhat more rounded than in other males of the *caldarena* group. F.-w. slightly darkened at base. Apex narrowly black continued as a narrow hind-marginal line. Black spots as follows :—One in cell over origin of nervule 2. A double spot on discocellulars. Beyond cell an oblique band of four black spots in a straight line at right angle to costa followed by a spot in 3 rather more distal and beneath this a submarginal spot in 2 and in 1b. A spot in 2 beneath origin of nervule 3 and beneath it a spot in 1b. A subbasal spot in the same area. H.-w. slightly blackened at base and having a black hind-marginal border about 2 mm. wide bearing indications of paler internervular marks; its inner edge slightly arched between the nervules. Black spots corresponding to those on underside but rather faintly indicated towards inner margin. Fringes white.

Underside. F.-w. as on upperside but rather paler and having two spots on costa near base.

H.-w. as on upperside but without basal black and the hind-marginal border bearing white internervular spots. Black spots as follows :—One in 7 just beyond origin of nervule 7. One in 6 much nearer margin. One near base of area 4. Beneath it but nearer margin a spot in 3. One near base of 2. Beneath it a spot in 1c, followed by one in 1b rather nearer base, and a dot in 1a. A spot in 9, one in 8, a subbasal in 7, two in cell, one in discocellulars, a basal and a subbasal in 1c, 1b, and 1a.

Head black with a pale mark between the eyes, and two yellowish tufts on collar. Thorax black with reddish hairs. Abdomen black above with yellowish lateral spots, except last three or four segments, which are yellowish. Claws unequal.

♀ unknown.

An example in the National Collection agrees very closely with the type, differing only in the following points :—F.-w. The submarginal spots are absent in 2 and 1b, the first or costal spot of the discal row is very minute, and there is hardly any basal black. H.-w. There is a small discal spot in area 5. Underside. H.-w. the marginal border is formed of much narrower black arches on a fine marginal line, thus enclosing larger whitish spots.

For the present I must keep *A. marnois* separate. Aurivillius regards it as a form of *A. oncaea*. If, however,

Rogenhofer's type is specifically identical with the specimen in the National Collection above described, this must be an error, as the latter example bears a much closer relationship to *caldarena* and *caecilia*. The genital armature is only very slightly different from that of the two species mentioned, that of *A. oncaea* being of an entirely different form. On the whole I regard it as nearest to *A. caecilia*, and the acquisition of further material may decide whether it is really separate from that species.

The type was taken at Bahr-el-Seraf in the Sudân. The British Museum specimen is merely labelled Victoria Nyanza.

71. *ACRAEA AGLAONICE*. Pl. X, f. 16.

Acraea aglaonice, Westwood, Oates, Matabeleland, p. 346, pl. F, f. 9, 10 (1881); Ed. 2, p. 353, pl. 6, f. 9, 10 (1889); Trimen, S. Af. Butt., 1, p. 151, pl. 3, f. 3 (1887); *l.c.* 3, p. 398 (1889); Proc. Zool. Soc., p. 27 (1894); Marshall, Trans. Ent. Soc., p. 555 (1896); Aurivillius, Rhop. Aeth., p. 99 (1898); Trimen (ab. melan.), Trans. Ent. Soc., p. 64, pl. 4, f. 4 (1906).

= *A. fenestrata*, Trimen, Trans. Ent. Soc., p. 435 (1881).

MASHONALAND, DELAGOA BAY, TRANSVAAL, NATAL, MANICAILAND.

♂. Expanse 50–62 mm. Wings orange red to rosy red. F.-w. A narrow black line along costa (rather wider at apex) and continued along hind margin to angle. Costa, apical and hind-marginal portion of wing inclining to orange. A slight dusky suffusion at base. Ends of nervules rather distinctly black. In the subapical region in areas 4 and 5 (and sometimes slightly in 6), a transparent mark caused by a paucity of scales. This transparent marking may be almost absent in dry season examples. Black spots as follows:—A large, transverse, irregularly shaped spot in cell above origin of 2, and a black mark on discocellulars, usually on upper part but sometimes over whole width of end of cell. Beyond cell and just before the transparent marks a discal row of fine spots in 10, 6, 5, 4, and 3, the first sometimes absent, and the last sometimes very small. The three middle spots almost in a straight line, the first rather more distally placed, the fifth with its long axis pointing towards apex. In 2 a spot close to median (absent in one example). In 1b a discal spot below that in 2 and slightly nearer margin, and

a second spot near median at about two-thirds of the distance from base to origin of 2.

H.-w. with a slight dusky basal suffusion and a black hind-marginal border varying from 1 to 2 mm. in breadth and very rarely showing traces of paler internervular markings. Black spots very small and more easily observed on underside. Those near inner margin sometimes only faintly indicated.

Underside. F.-w. paler and duller than above and rather glossy. A small basal and subbasal spot on costa. Apical and hind-marginal areas ochreous with orange internervular rays. Spots as on upperside. H.-w. pinkish ochreous. A very narrow black line round hind margin, followed by a band of greenish ochreous corresponding in width to the black border of the upperside and divided by narrow internervular black arches. This marginal border is followed by internervular splashes of orange, and the basal and median portions of wing bear internervular rose pink marks. Black spots very small and slightly variable. A discal row beginning with one in 7, 6, 5, and 4, the fourth much further from margin than the third. Very rarely a minute dot in 3. I have never seen a ♂ with a spot in 2, though there is sometimes a very small one in the ♀. In 1c a spot at base, a second just before origin of 2, and a third half way between the second and the margin. In 1b two spots near middle, in 1a one near base and one near middle. In 8 a spot near precostal, beyond this in 7 a transverse spot. A spot at base of 7, two in cell and one on middle discocellular.

Wet season examples have a general tendency to a richer colour and more dusky suffusion especially of the f.-w.

Head black with a brown tuft between the eyes and two on the collar. Thorax black with lateral brown hairs and two dorsal whitish streaks. Base of abdomen black with orange lateral spots. Remainder orange. Claws unequal.

♀. Expanse 60-66 mm. Dry season form :—F.-w. Costa, base, and inner margin more or less heavily suffused with umber brown, median area rosy red, apex and hind margin brownish ochreous. A black tip at apex narrowing suddenly below nervule 7 but continued along hind margin as a line broader than in ♂. Ends of nervules heavily marked with black. The whitish transparent patch conspicuous. Black spots as in ♂ and usually an additional spot in cell at about the middle. H.-w. rosy red suffused with brownish black at base. Hind margin black about 3 mm. broad and bordered inwardly by a band of brownish ochreous on which the nervules are heavily dusted

with black. Underside much as in ♂. Abdomen black above with white lateral spots.

Wet season form. F.-w. basal, costal, and apical suffusion black, median area dull pinkish ochreous, apical and hind-marginal areas ochreous. H.-w. ochreous along costa, remainder black with a white median patch. Spots in both wings as in ♂. Underside much as in ♂ but f.-w. very dull coloured, and h.-w. with much less orange and pink, median area whitish, and the black arches of marginal border very heavy. Abdomen black above with white lateral and yellowish dorsal spots. Intermediates between the extreme seasonal forms are found in any good series.

A. aglaonice is readily distinguished by the transparent mark in the f.-w. and the very small spots in the h.-w. It is a very distinct species, the peculiar projection on the middle of the inner side of the claspers distinguishes the male armature at a glance from that of any other species.

In 1906 (*l. c.*) Trimen described a melanic ♀ aberration of this species from Melville, Johannesburg, and at the same time gave an interesting note from Mr. Feltham, who states that this butterfly made its appearance in the depth of the winter season in 1904 at Johannesburg, and that other members of the genus also seem to choose the coldest season for their appearance there.

[The range of the species is described by Trimen as from S. Matabeleland to E. Mashonaland and Delagoa Bay, through the Transvaal as far as Johannesburg and extending to Zululand, Delagoa Bay, and very rarely to Natal.]

72. *ACRAEA ATERGATIS*. Pl. XII, f. 2.

Acraea atergatis, Westwood, Oates, Matabeleland, p. 342, pl. F, f. 1, 2 (1881); *l. c.*, Ed. 2, p. 350, pl. 6, f. 1, 2 (1889); Trimen, Proc. Zool. Soc., p. 65 (1891); Aurivillius, Rhop. Aeth., p. 100 (1898); Neave, Proc. Zool. Soc., p. 25 (1910).

CONGO (Katanga, Lualaba R., Maringa R.); RHODESIA (Victoria Falls, Barotse, Mashonaland); ANGOLA (Cugho R., Luacinga R., Guimbungo).

♂. Expanse 50-60 mm. Dry season. Wings dull orange-ochreous. F.-w. rather pointed. H.-w. rather distinctly angulated at nervule 4. F.-w. costa very slightly blackened and a faint black line round hind margin. Ends of nervules along hind

margin black, and some indication of black internervular rays. Black spots as follows:—One in cell above origin of 2. A double spot on upper part of discocellulars. A discal row of seven, the first sometimes very faint and usually further from base than the remainder. The next four (in 6, 5, 4, and 3) in a straight line at right angles to costa. The sixth and seventh in 2 and 1b lie almost in a straight line with the fifth and at right angles to the inner margin. A small subbasal spot in 1b.

H.-w. with a slight black suffusion about base of median, and a narrow black line round margin. Black spots as on underside, but some may be only faintly indicated, whilst others may be larger above than below.

Underside a pale dull replica of the upper. F.-w. with two spots at base of costa. H.-w. spots as follows:—A discal row of nine. The first in 7, the second in 6 nearer margin, the third in 5 almost immediately below the second, the fourth close to end of cell, the fifth in 3 a short distance from end of cell, the sixth, seventh and eighth in 2, 1c, and 1b almost in a straight line at level of end of cell, the ninth in 1a rather nearer base. A spot in 8 near precostal, a subbasal in 7, two in cell, and one at base of area 5 against m.d.c. A subbasal in 1c, 1b, and 1a, the middle one further from base. Some black marks about base of nervures. Head black with a red tuft between eyes and two on collar, thorax black with red hairs, base of abdomen black with yellow lateral spots, remainder whitish. Claws unequal.

Wet season form. Differs from the dry season form in having the ground-colour redder, the costa blacker, all the spots larger, a trace of submarginal spots in 1b and 2, well-defined black internervular rays on apical area, h.-w. spots large and sometimes partly confluent, the hind margin with a black border about 1.5 mm. wide.

Underside like the upper but duller, and in h.-w. a well-marked whitish marginal border divided by the black ends of nervules, and bounded outwardly by a narrow black line, and inwardly by black internervular curved marks.

End of abdomen orange.

♀. Expanse about 60 mm. Resembles wet season ♂, but in some cases the underside is distinctly darker than the upper, especially on the h.-w., the spots ringed with grey, the fringes conspicuously white, and the black marks at inner edge of marginal border may be produced into points between the nervules. I have not seen melanic forms of the ♀ such as exist in allied species.

A. atergatis appears to be generally somewhat rare. Neave describes it as not common in the north of N.E. Rhodesia, but plentiful in Katanga. It is described as on the wing all the year except in June and July. Dr. Dixey has recorded (Proc. Ent. Soc., p. iii, 1906) that he noticed in this insect a musty odour with a strong ammoniacal scent like that of stable litter.

73. *ACRAEA STENOBEA*. Pl. X, f. 15.

Acraea stenobea, Wallengren, Wien. Ent. Mon., 4, p. 35 (1860); Öfvers. Vet. Akad. Förh., 29 (3), p. 49 (1872); Trimen, S. Af. Butt., 1, p. 153, pl. 3, f. 2 (1887); Proc. Zool. Soc., p. 71 (1891); Westwood, Oates, Matabeleland, Ed. 2, p. 354, pl. 6, f. 11, 12 (1889); Aurivillius, Rhop. Aeth., p. 98 (1898); Butler, (*caecilia*, var.) Proc. Zool. Soc., p. 401 (1898).

= *acronycta*, Westwood, Oates, Matabeleland, Ed. 1. p. 346, pl. F. f. 11, 12 (1881).

♀ = *natalica* (var.), Trimen, Trans. Ent. Soc., p. 346 (1870).

= *lygus*, Druce, Proc. Zool. Soc., p. 408 (1875).

= *albomaculata*, Weymer, Stettin. Ent. Zeit, p. 83 (1892).

ANGOLA (Bihé, Benguella); DAMARALAND; CAPE COLONY; BECHUANALAND; KHAMA'S CO.; TRANSVAAL; MASHONALAND; BAROTSELAND; GERMAN E. AFRICA (Saadani).

♂. Expanse 50-60 mm. F.-w. milky ochreous inclining to orange at apex between nervules, often with a pale pink median suffusion. Base widely suffused with sepia which extends about two-thirds the length of cell, nearly half the length of 1a and 1b, but rarely into 2. Costa very narrowly black. Apex and hind margin narrowly black. Nervures and nervules more or less distinctly black. Black spots rather variable, but the following usually present:—One in cell above origin of 2, one on upper part of discocellulars. A discal row of four, in 6, 5, 4, and 3. The first three in a straight line, the fourth rather more distally placed. In 2 a spot near median, and generally a submarginal spot; in 1b, a spot near median, a second rather beyond middle, and often a third (submarginal) spot.

H.-w. more pinkish than f.-w. and sometimes of a delicate pale rose tint. A black basal suffusion extending about half the length of cell and a black hind-marginal border about 2 mm. wide, usually showing a faint indication of paler internervular markings. Black spots variable. In the examples before me the largest number is eleven, two in 7, two in cell, one in 4 near end of cell, and two in 1c, 1b, and 1a, all these faint and only showing through from beneath.

Underside. F.-w. as above but duller and without the dark suffusion. Two black spots on costa, one at base, and one just beyond. Sometimes a spot beyond end of cell in 10. Remaining spots as above.

H.-w. pale pinkish, the distal portion yellow, and the basal portion faintly reddish between the nervules. Black spots rather variable. One in 8 near precostal, a very minute spot in 2, a short distance below median, and some irregular black at base of nervures enclosing two white spots which lie close against thorax. Remaining spots as above. Marginal border as above but with seven large white internervular spots, that in 1c doubled.

Head black with two white marks between the eyes, one behind each eye, and two spots on the collar. Thorax black with two white dorsal anterior streaks. Base of abdomen black with whitish lateral spots and transverse lines. Remainder creamy white. Claws unequal.

♀. Expanse 50-60 mm. F.-w. orange ochreous with a rich sepia basal suffusion, extending in some cases nearly all over the wing, but in the latter case leaving a trace of a paler subapical band just beyond discal black spots. Apical and marginal black broader than in ♂. Black spots equally unstable, the discal row varying from a confluent band to two small separate spots in 4 and 5.

H.-w. milky ochreous to salmon-pink with a black basal suffusion and a broad black hind-marginal border, in some examples 4 mm. wide at area 2. A white discal suffusion of very variable extent.

Underside f.-w. orange ochreous sometimes with a trace of the black basal suffusion especially along nervure 1, and the base of median. The apical region with orange internervular rays on a paler ground. Spots as on upperside with the two basal costal spots as in ♂. H.-w. rose-pink at base, distal portion orange, some pale ochreous suffusion about nervules in median area. Black marginal border with large rounded white spots; in one example the margin spots are pale ochreous and there is a line of same colour along inner edge of marginal black. The fringes of both wings are pale lemon ochreous and very conspicuous. Abdomen black above with white lateral spots.

A. stenobea is rare in collections. The variation in the ground-colour and extent of black suffusion may be more or less seasonal, but I have not seen a sufficiently long series to be able to form an opinion on this point.

Butler has suggested that *stenobea* is a seasonal form of *caldarena*, and later (P.Z.S., 1898, p. 401) refers to it as a variety of *caecilia*. The structure of the male armature shows, however, that it is quite a distinct species. Trimen states (*l. c. sup.*) that the white suffusion on the ♀ h.-w., though variable in extent, seems always to be present.

74. *ACRAEA NATALICA*. Pl. XII, f. 1.

Acraea natalica, Boisduval, Voy. Deleg, 2, p. 590 (1847); Staudinger, Exot. Schmett, 1, p. 83 (1885); Trimen, S. Af. Butt., 1, p. 155 (1887); Butler, Proc. Zool. Soc., p. 66 (1888); Aurivillius, Rhop. Aeth., p. 101 (1898); Butler, Proc. Zool. Soc., p. 53 (1898); *l. c.*, p. 26 (1901); Dixey and Longstaff, Trans. Ent. Soc., p. 318 (1907); Rogers, Trans. Ent. Soc., p. 525 (1908); Neave, Proc. Zool. Soc., p. 26 (1910); Aurivillius, Sjöstedt's Exp., p. 4 (1910).

? = *cephaea*, Bertolini, Mem. Accad. Bologna, 2, p. 176 (1851).

= *bellua*, Wallengren, Rhop. Caffr., p. 22 (1857).

= *hypatia*, var., Trimen, Rhop. Afr., Austr., p. 98 (1862).

ANGOLA (Canhoca); CONGO (Kassai; Lualaba); BAROTSELAND; NATAL; TRANSVAAL; CAPE COLONY; GRIQUALAND; MASHONALAND; PORTUGUESE E. AFRICA (Mozambique); NYASSALAND; GERMAN E. AFRICA; BRITISH E. AFRICA (Taita, Taveta, Kibwezi); PEMBA I.; ZANZIBAR.

f. *umbrata*, Suffert, Iris, p. 30 (1904).

= *natalica* Hoppfer, Peters Reise, Ins. p. 371, pl. 23, f. 12, 13 (1862).

PORTUGUESE E. AFRICA; GERMAN E. AFRICA; BRITISH E. AFRICA; PEMBA I.; CONGO (Lualaba).

A. natalica pseudogina, subsp.

Westwood (*A. pseudogina*), Gen. Di. Lep., p. 531 (1852); Aurivillius, Ent. Tidskr., 14, p. 276 (1893); Karsch., Berl. Ent. Zeit., 38, p. 195 (1893); Aurivillius, Rhop. Aeth., p. 100 (1898); Lathy, Trans. Ent. Soc., p. 186 (1903); Aurivillius, Ann. Mus. Genov., p. 11 (504), (1910).

= *egina*, Stoll., (*Pap.*) Cramer Suppl., p. 122, pl. 25, f. 3, 3c (1790).

PORTUGUESE GUINEA; S. LEONE; GOLD COAST; NIGERIA; ANGOLA.

A. natalica abadima, subsp.

Ribbe (*A. abadima*), Iris, 2, p. 182, pl. 4, f. 2 (1889); Aurivillius, Ent. Tidskr., 12, p. 201 (1891); Butler (*pseudogina*, var.), Proc. Zool. Soc., p. 731 (1895); Aurivillius (*pseudogina* var. *abadima*), Rhop. Aeth., p. 101 (1898).

= *clarei*, Neave, Novit. Zool., 11, p. 327, pl. 1, f. 4 (1904).

CONGO (Stanleyville); GERMAN E. AFRICA (Ukerewe I., Muansa); BRITISH E. AFRICA and UGANDA (Entebbe, Kikuyu, Kampala, Unyoro, Mori R., Pt. Alice); UGANDA (Bulamwezi); ABYSSINIA (Alesa, Kotscha).

A. natalica natalica. It is a matter of some difficulty adequately to describe this species owing to its extreme variability. It is however abundant and widely distributed, and familiarity with its general appearance is easily attained by reference to the long series to be found in most collections. Average examples may be described as follows:—

♂. Expanse 50–80 mm. F.-w. rosy red to pinkish ochreous, subapical area deep ochreous. A basal black suffusion extending nearly to middle of cell. Costa very narrowly black. Apex black (3–4 mm. wide), becoming very narrow at 4 and continued as a fine marginal line to hind angle. Black spots variable. When all present arranged as follows:—One in cell at or just before origin of 2, a double spot on upper part of discocellulars. Just beyond cell a discal row of confluent spots widest near costa and extending to nervule 4, and forming together a *characteristic wedge-shaped mark*. A submarginal row of three spots in 3, 2 and 1a. A spot near base of 3 in line with, but separated from, the wedge-shaped row. A similar spot near base of 2 well separated from the neighbouring nervules. Immediately beneath this a spot in 1a, and in the same area another spot at the edge of the black basal suffusion.

H.-w. with a black basal suffusion extending nearly to middle of cell, and a black hind-marginal band with a very faint indication of paler internervular marks. This band varies in width from about 2–4 mm. The discal and basal spots are always small, and while corresponding to those on the underside, are in many cases only faintly indicated.

Underside. F.-w. ground-colour as on upperside but paler and duller. The black basal suffusion only shows through from the upperside and the apex is greenish-ochreous with orange internervular marks, the margin being narrowly black. Two black spots at base of costa, remaining spots as above but those just beyond cell more distinctly separated.

H.-w. ground-colour pinkish ochreous. No basal suffusion. A hind-marginal band formed of large pale sage-green spots surrounded by heavy black arches and a black marginal line. In area 1b there is a marginal line of the same colour as the spots. About the base, inner margin, and along inner edge of

TRANS. ENT. SOC. LOND. 1912.—PART I. (JULY) O

hind-marginal border are reddish internervular markings. Black spots as follows:—A discal row, the first in 7 about middle, second in 6 nearer margin, third in 5 beneath second but slightly more distal, fourth in 4 just above outer point of cell, fifth in 3 directly below fourth and some distance from end of cell, sixth in 2 further from margin, seventh in 1c at about same level, eighth in 1b slightly nearer base. A spot in 8 near precostal, a subbasal in 7, two spots in cell, one at base of 5 on m.d.c. a large subbasal in 1c, beneath it a spot in 1b, and two equidistant spots in 1a. Head and thorax black with white spots, base of abdomen black above with yellowish lateral spots, remainder orange or whitish. Claws unequal.

The male exhibits a certain amount of seasonal dimorphism, wet season forms being often more heavily spotted and especially having a broader h.w. marginal band. Very dry males often have the ground-colour ochreous.

♀. Expanse 46–80 mm. Dry season. Very like ♂ but with more rounded f.-w. Spots of h.-w. margin on underside whitish. Abdomen black above with white spots.

♀ Intermediate. F.-w. smoky ochreous much paler in subapical area. H.-w. dusky pink. Marginal border broad and inwardly much suffused, the black sometimes extending over the whole wing.

♀ Wet season. Sepia black. F.-w. with a whitish subapical bar and a central whitish band. H.-w. sometimes with a white median patch.

In all these ♀ forms the spots and markings are as in the ♂.

A. natalica f. *umbrata* resembles the ordinary form but has a greyish median band across the f.-w. Hoppfer's figures in "Peters' Reise nach Mossambique" agree closely with this form.

A. natalica pseudogina, subsp. Pl. VI, f. 9 (larva).

This is the western subspecies. Typical examples of the ♂ have the f.-w. smoky black, the spots being thereby much obscured. Near the apex are two or three internervular markings, orange ochreous to white. The h.-w. is, in fresh specimens, rich rose colour without, or with only a faint black marginal band, though the black arches of the underside are just visible. The spots are represented only by dull brownish marks.

Some examples have a reddish suffusion in the median area of f.-w. and the apical ochreous marks may be continued as a marginal border. The usual black spots are well marked on the underside, and the h.-w. marginal spots are ochreous like the ground-colour, instead of green. The ♀ is like the ♂ but the f.-w. red suffusion is more frequently developed.

In a beautiful series of very perfect examples bred by Mr. W. A. Lamborn near Lagos, the colours of both surfaces are extremely brilliant, and there is in nearly every case an additional submarginal spot in f.-w. in area 4, and one or two submarginal spots on the h.-w. underside in 7, and 6.

Acraea natalica abadima, subsp.

This may be regarded as the central race of the species. It has a wide range extending from Angola, across the Upper Congo region to British E. Africa and into Abyssinia. In the f.-w. the spots and markings are as in typical *natalica*, though there are often four submarginal spots. The whole f.-w. is rather thinly scaled and has a delicate translucent appearance. The subapical area is grey, and at the inner edge of the apical black there are orange-ochreous internervular markings continued along the margin as more or less rounded marginal spots. There is very little black basal suffusion in either wing. The h.-w. is red, probably rosy red in very fresh specimens. The spots are indistinct. There is no black marginal border, but a narrow black line on which are faintly indicated the black arches of the underside. On the underside the f.-w. is very thinly scaled and glossy, and the marginal spots of the h.-w. are rich ochreous.

The ♀ has the same semitransparent f.-w. but the ground-colour is dusky grey sometimes with a slight reddish tinge and the orange subapical marks are replaced by white. H.-w. reddish grey or dull grey often with a slight median white suffusion.

Between the above forms nearly every grade of intermediate pattern may be observed in a long series, though the *pseudogina* form is perhaps more clearly separated from the type pattern than is *abadima*. Perhaps the most characteristic features are the wedge-shaped f.-w. discal mark, and the black basal suffusion in both wings. *A. anemosa* has the same features but the black suffusion extends to both surfaces, and is spotted with white on the h.-w. underside.

The larva of *A. natalica* is described by Trimen (*l.c.*) as light buff-yellow with a white, black-edged dorsal stripe, and a white lateral stripe. A black stripe on each side just above the lateral row of spines, and a broad, black vertical stripe interrupted by the bases of the prolegs. The pupa is also noted by the same author as "creamy white, with the limbs and position of wing nervures outlined in black; a triple black streak from top of head

along middle of back of thorax, and a broad lateral streak varied with white spots; the abdomen bearing two dorsal, two lateral, and one median ventral, chains of black rings enclosing orange yellow spots."

The larva of *natalica pseudogina* I have figured on Plate VI, from examples sent home by Mr. W. A. Lamborn. The black stripes would appear to be less marked than in the southern form, but the white marks on the head are characteristic.

A ♀ of *natalica natalica* taken by Rogers near Rabai bears a note to the effect that it "emitted a strong odour like that of rotten cabbages."

75. *ACRAEA ASBOLOPLINTHA*. Pl. XII, f. 4. Pl. XV, f. 23.

Acraea asboloplintha, Karsch., Ent. Nachr. 20, p. 223 (1894); Aurivillius, Rhop. Aeth., p. 90 (1898); Heron, Trans. Zool. Soc., xix, p. 148 (1909).

= *dissociata*, Gr.-Smith, Novit. Zool. 5, p. 350 (1898); Rhop. Exot., p. 19, pl. 6, f. 4, 5, 6 (1901).

= *natalica* var. *dissociata*, Butler, Proc. Zool. Soc., p. 46 (1902).

CONGO (Ruwenzori Region, 7,000 ft.; Mt. Mikenö); UGANDA; BRITISH E. AFRICA (Tiriki Hills).

A. asboloplintha rubescens, subsp.

Trimen, Trans. Ent. Soc., p. 547 (1908).

♀ = *asboloplintha* ♀, Suffert, Iris, p. 19, pl. 2, f. 6 (1904).

BRITISH E. AFRICA (E. and S. of Kikuyu, Nairobi, Weithaga, Ft. Hall).

♂. Expanse 54–60 mm. F.-w. warm sepia, a brick red median patch on inner margin rarely extending slightly into area 1b. Small black spots rather faintly discernible on the dark ground corresponding to those on the underside.

H.-w. brick red with a slight black basal suffusion and a narrow black line round hind margin. Black discal and basal spots, very small, and corresponding with those on underside.

Underside. F.-w. pale umber brown, apex with orange brown internervular marks. One black spot (rarely two) at base of costa and a black line round apex and hind margin. A black spot in cell just before origin of 2, one on upper part of l.d.c. Beyond cell four spots in 6, 5, 4, and 3 and all in a straight line nearly at right angles to costa. A spot in 2 near median, beneath it but slightly nearer to base a spot in 1b, and in same area a subbasal spot near median.

H.-w. deep ochreous with red patches at base and in 1b and 1a.

A faint black line round hind margin bordered inwardly by a paler ochreous band about 1.5 mm. wide. The internervular spaces of the discal area orange ochreous. Black spots as follows:—A discal row of eight, first in 7 near middle, second in 6 nearer margin, third in 5 immediately beneath second (or very slightly more distally placed), fourth in 4 close to end of cell, fifth in 3 a short distance from end of cell; sixth, seventh, and eighth, in 2, 1c, and 1b, all in a straight line at right angles to inner margin. A spot in 8 close to precostal, two in basal half of cell, a basal and a subbasal in 1c, and 1a, and a subbasal in 1b.

Head and thorax black with a few small white marks. Abdomen black at base with lateral orange spots, remainder orange ochreous. Claws unequal.

♀ resembles ♂ but the brick red is entirely replaced by ochreous brown. On the h.-w. underside the basal and marginal portions are whitish. Some red marks at base of cell, 1c, and in 1b and 1a. Spots all as in ♂. Abdomen black with small white lateral spots.

A. asboloplintha rubescens, subsp.

♂. Expanse 58–62 mm. Differs from the type form in having the ground-colour of the h.-w. rosy red. In the f.-w. the greater part of area 1a, the middle of 1b, base of 2, and a part of cell are also flushed with rosy red. Dark areas sepia black. The black border of h.-w. is about 1 mm. broad. All the black spots are decidedly larger. The underside is as in the typical form but the colours are more brilliant.

♀. Like the ♂ but with the rosy red areas replaced by white. Dark areas paler than in ♂ and h.-w. broader and inwardly suffused.

Suffert's description of the ♀ *asboloplintha* applies to this form, but he states that it is "coloured as in the ♂." The figure accompanying the description is an uncoloured photograph and appears to represent the black and white ♀ described above. The figure thus appears to be correct and the description wrong, but up to the present I have been unable to find an explanation of the discrepancy. When Trimen described the *rubescens* form he had only one example of each sex, and suggested that possibly the black and white ♀ might be exceptional and that there might also be a ♀ coloured like the ♂. Since that time the Oxford Museum has acquired further examples, but they furnish no evidence that the ♀♀ are ever other than black and white.

GROUP XII.

76. *ACRAEA ANACREON*. Pl. XIII, f. 3. Pl. XV, f. 22. Pl. XVI, f. 14.

Acraea anacreon, Trimen, Trans. Ent. Soc., p. 77, pl. 6, f. 3-5 (1868); *l. c.*, p. 347 (1870); S. Af. Butt., 1, p. 168 (1887); Marshall, Trans. Ent. Soc., p. 552 (1896); Butler, Proc. Zool. Soc., p. 841 (1897); Trans. Ent. Soc., p. 107 (1897); Aurivillius, Rhop. Aeth., p. 96 (1898).

BASUTOLAND; NATAL; TRANSVAAL; KAFFIRLAND; NYASSALAND (Kigonsera); GERMAN E. AFRICA (Unyika); CAPE COLONY.

A. anacreon bomba, subsp.

Grose-Smith, Ann. Nat. Hist. (6), 3, p. 128 (1889); Smith and Kirby, Rhop. Exot., 19 (*Acraea*), p. 8, pl. 3, f. 5, 6 (1892); Aurivillius, Rhop. Aeth., p. 96 (1898).

= *induna* (f. aestiv.), Trimen, Trans. Ent. Soc., p. 184, pl. 5, f. 3, 3a (1895); Butler, Proc. Zool. Soc., p. 905 (1898); Neave, Proc. Zool. Soc., p. 16 (1910).

ANGOLA (Bailundu); N.E. RHODESIA (Chambezi Valley, L. Bangweolo); MASHONALAND; NYASSALAND; GERMAN E. AFRICA; BRITISH E. AFRICA (Mombasa).

A. anacreon anacreontica, subsp.

Grose-Smith, Novit. Zool., 5, p. 352 (1898); Aurivillius, Rhop. Aeth., p. 96 (1898).

BRITISH E. AFRICA (Nandi, W. Slopes of Mt. Kenia 6,500 ft.).

A. anacreon speciosa, subsp.

Wichgraf, Berl. Ent. Zeit., p. 245, pl. 6, f. 9 (1908).

ANGOLA (Ceramba, Bihé).

A. anacreon anacreon.

♂. Expanse 50-52 mm. Deep golden orange with black, spots and markings. F.-w. somewhat narrow and angulated, narrowly black along costa. A black hind-marginal band 5 mm. wide at apex and tapering off towards hind angle. On this border a marginal row of spots of the ground-colour narrow and elongated at apex but becoming shorter and rounder towards hind angle. Above subcostal in the subapical region the ground-colour is distinctly paler (sometimes whitish) and beneath this is sometimes an indication of a pale subapical patch. A slight powdering of black at base. Spots rather variable. One large spot in cell just beyond origin of nervule 2 and a mark on the discocellulars. Beyond end of cell a row of two to three discal spots in 6, 5, and 4, and lying

in a straight line nearly at right angles to the costa. Beneath these a spot in 3 and one in 2 near the base of these areas, and lying in a line almost at right angles to that of the first three spots. In 1b a spot, usually immediately beneath that in 2, and in the same area a subbasal spot (sometimes absent).

H.-w. with a black suffusion having its maximum extent in area 1c. A large spot in cell beyond middle, and a subbasal spot (sometimes faintly indicated) in area 7. The remaining subbasal spots obscured by the black suffusion. A row of eight discal spots arranged in a peculiarly characteristic manner. The first four (7-4) lie in a regular curve approximately parallel to the margin, the next two are so placed that the line takes a sharp bend inwards. The seventh spot is slightly nearer the margin than the sixth and eighth, these three lying in a kind of secondary curve. The hind-marginal border is black about 2 mm. wide and bears seven yellow internervular spots (that in 1c doubled). The fringes of both wings are whitish and rather well developed.

Underside. F.-w. a black spot at base of costa. Costal margin ochreous, subapical area pale ochreous, apex and hind margin greyish ochreous with a dusting of orange between the strongly marked black nervules. Remainder dull orange ochreous with spots as on upperside.

H.-w. rather pale ochreous, area 9, base and median portion of 1c, base of 2, and extremity of cell, pink. A spot in 8 against the precostal. All the spots large and more distinct, a subbasal spot in 1c, one in 1b, and two spots in 1a, the outermost making a continuation of the discal curved row. Beyond the median area the nervules are black and in 1c there is a marked black internervular ray. The hind margin is sulphur yellow divided into spots by the nervules, bounded externally by a fine black marginal line, and internally by very narrow black arches tinged with pink on their inner edge. Head and thorax dark brown, reddish tufts on the collar, abdomen black above, yellowish beneath with pale lateral spots. Claws unequal.

♀. Expanse 54-58 mm. Upperside f.-w. violaceous to pinkish grey. Spots and markings as in ♂ but there is a more or less developed subapical creamy ochreous patch, and the sub-marginal spots are paler at the apex and fading to cream colour hind angle.

H.-w. ochreous grey to orange ochreous, much paler at inner margin. Spots as in ♂. Hind-marginal border with pale lemon ochreous spots.

Underside f.w. Costa and hind margin greyish ochreous, a pale lemon ochreous subapical patch, internervular spaces light ochreous along margin. Remainder of wing as on upperside but paler.

H.-w. lemon ochreous with spots and markings as in ♂.

A. anacreon exhibits a certain amount of seasonal dimorphism, dry-season specimens having a tendency to more elongate wings and less pronounced spotting.

A. anacreon bomba, subsp.

In this form the wings are usually more rounded, the f.-w. black apical patch is in wet season examples well developed, its inner edge lying more transversely across the wing (width about 5 mm.), the marginal internervular spots are either faintly discernible or obsolete. The discal spot in f.-w. 1b is generally nearer margin than in *anacreon anacreon*. The most noticeable difference in the h.-w. is the decreased width of the hind-marginal border. The colouring of the underside is much richer than in *anacreon anacreon*. The f.-w. has the apex greenish ochreous with orange internervular rays. In the h.-w. the space between the discal and subbasal spots is almost entirely rose pink, and between the discal spots and the marginal border the internervular spaces are flushed with orange. There is much more marked seasonal dimorphism in this form, and though the wet season forms (= *induna*) are extremely variable there is a general tendency in both sexes to a paler ground-colour and heavily marked black apices in the f.-w. In some wet season forms from near Ft. Jameson all the spots are large and there is a heavy black basal suffusion in h.-w.

There is on the whole less difference of colour between the sexes, but the ♀♀ are generally paler and greyer.

In Proc. Zool. Soc., p. 16, 1910, Neave expresses the opinion that Gr.-Smith's *bomba* should be kept separate from *induna*. Two dry-season examples, however, taken in N.-W. Rhodesia, agree so nearly with *bomba* that I am convinced that the synonymy here adopted is the correct one.

A. anacreon anacreontica, subsp.

This form presents the following features:—

F.-w. pale ochreous with a basal suffusion of orange ochreous of rather variable extent. Pale apical and hind marginal spots well developed and sharply defined. H.-w. orange ochreous with a narrow black border bearing very distinct pale ochreous spots. Inner margin inclining to pale ochreous. Discal spots

for the most part faint and obsolescent. On h.-w. underside the spots are much smaller and closer together and enclose an irregular but well-defined band of rose-pink. In many examples the two central spots in 1c are joined together and form a peculiar semicircular line enclosing a rose-pink mark. The ♀ may resemble the ♂ or may be more heavily spotted and of a generally richer ground-colour.

A. anacreon speciosa, subsp.

This is the Angola subspecies of *anacreon*. I am indebted to Herr Wichgraf for the opportunity of examining the type. The following are the principal differences from typical *anacreon*:—

Wings brighter red, with little indication of the black apical area in f.-w. The spot in area 2 lies further from the margin. The underside is very brightly coloured, with orange patches between the h.-w. nervules.

In the type the spot in cell lies before origin of nervule 2, but this may be an aberration as I have before me examples in which this feature is normal. The f.-w. spots are larger and except for the absence of the apical black the specimen has the appearance of a heavily spotted example of the *induna* form.

I cannot regard the distinction between the above forms as more than subspecific. The genitalia appear to be all of the same structure and, though simple, possess certain features which are remarkable and common to all. The claspers bear on their outer side peculiarly dense tufts of hairs or scales, which, however, are easily removed if due care be not exercised in dissection. Also the dorsal abdominal plate is large, deeply bifid, and its inner membrane is densely clothed with a mass of special scales, so numerous and so easily detached as to obscure the preliminary operations of dissection.

I have before me a series of some eighty examples from various localities, and it is possible to arrange them so as to show a perfect gradation of wing pattern.

Marshall found the larva at Ulundi, and records that out of seventy-five individuals, twenty were killed by a dipterous parasite. I cannot find any description of the early stages.

Butler records both *bomba* and *induna* forms taken together by Crawshay on the Chuona River, Unyika.

A remarkable feature of the species is the variability in the relative positions of the spots in f.-w. 1b and 2. In *anacreon anacreon* that in 1b is usually beneath that

in 2, whereas in *anacreontica* sometimes, and generally in *bomba* and *speciosa* it is nearer margin.

77. *ACRAEA RAHIRA*. Pl. XIII, f. 1.

Acraea rahira, Boisduval, Faune. Madg., p. 33, pl. 5, f. 4, 5 (1833); Voy. Deleg., 2, p. 590 (1847); Wallengren, Rhop. Caffr., p. 21 (1857); Trimen, Rhop. Af. Austr., p. 103 (1862); Mabille, Hist. Nat. Mad. Lep., 1, p. 110, pl. 11, f. 9, 10 (1885-7); Trimen, S. Af. Butt., 1, p. 166 (1887); Proc. Zool. Soc., p. 73 (1891); Aurivillius, Rhop. Aeth., p. 103 (1898); Fawcett (metam.), Trans. Zool. Soc., p. 294, pl. 46, f. 7, 8, 9 (1901); Trimen, Trans. Ent. Soc., p. 231, pl. 19, f. 1, 1a, 1b (1904); Neave, Proc. Zool. Soc., p. 26 (1910).

ANGOLA (Cugho R., Mikenge); DAMARALAND (Ovambo); CAPE COLONY; NATAL; TRANSVAAL; MASHONALAND; N.E. and N.W. RHODESIA (Alala Plateau, Chambezi Valley); PORTUGUESE E. AFRICA; [MADAGASCAR (?)].

♂. Expanse 38-45 mm. Wings rich to paler orange ochreous. F.-w. costa broadly black. Ends of nervules broadly black at margin and narrowing inwardly. A black basal spur in 1b. Black spots as follows:—One in cell above origin of 2. A mark on upper part of discocellulars. Beyond cell a discal band of four spots, the first three (in 6, 5, and 4) contiguous, their outer edges forming a somewhat convex curve, the fourth (in 3) slightly separated, its long axis pointing towards the apex. A spot in 2 below origin of 3, and immediately beneath it a spot in 1b.

H.-w. slightly black at base and having a narrow black margin deeply indented between nervules by the ground-colour; ends of nervules powdered with black. Spots corresponding to those on underside. Central area rather paler and bounded by a faint dusky line indicating the pattern of the underside.

Underside f.-w. much paler than above. Costa pale greyish ochreous. Ends of nervules in apical area very distinctly black. Spots as on underside, with an extra dot at base of costa. Beyond discal spots the apical area is pale ochreous, and between the nervules are orange lines, that in 6 reaching inwardly to the spots.

H.-w. pale creamy ochreous. Some irregular reddish ochreous marks at base and across the central area of wing, just before the discal spots. Beyond the discal spots a central band of the ground-colour traversing the wing as far as area 4 nearly at

right angles to the inner margin and then curving sharply upwards towards costa. As far as area 4 this band is distally outlined with sepia scales, beyond which the nervules are black, and the internervular spaces bear reddish ochreous rays. From apex to anal angle a fine black marginal line. Black spots as follows:—A discal series of nine, the first three (in 7, 6, and 5) nearly parallel to the apical curve, the line then bends sharply inwards and the remaining spots lie approximately at right angles to the inner margin. In addition to these there is a spot in 8 against the precostal, near it one in 7, two in cell, two on the discocellulars, one in 1c, 1b, and 1a and some irregular black at bases of nervules.

Head black with a pale mark between the eyes and orange hairs on collar. Thorax black with a few reddish hairs, abdomen black above, with lateral yellowish and dorsal whitish spots. Claws unequal.

♀. Expanse 44–52 mm. Resembles ♂ but the ground-colour is usually creamy ochreous, the spots are larger, and the black powdering of the nervules along the f.-w. apex and hind margin is so wide as to form a band broken only by narrow orange ochreous rays. In rare cases the ground-colour is nearly as dark as that of the ♂.

The larva is thus described by Fawcett (*l. c.*):—

“Larva, back and sides blackish; thoracic legs, claspers, and a line above them chrome yellow. A dorsal white stripe, and on each segment four yellow spots from which spring four branched yellow spines, the lower pair springing from the yellow spiracular line. These spines are shorter than in the majority of *Acraea* larvae. Head yellow.

“Feeds on a species of groundsel, *Erigeron canadense*.”

Two figures of the pupa are given: one pupa is waxy white and similar to the pupae of other *Acraeae*, the other ferruginous. The ferruginous pupae had nearly always been attacked by ichneumons, with which the larvae were much infested.

Trimen figures (*l. c.*) two aberrations of the ♂ from Johannesburg, the first having the black markings on both sides much enlarged, the second having no black spots except that in f.-w. cell (much reduced), those on f.- and h.-w. discocellulars, and a streak at base of h.-w. cell. On a previous occasion (*l. c.* 1891) the same author described a ♀ from Matabeleland corresponding to the first aberration mentioned above. The occurrence of the

species in Madagascar is extremely doubtful. Boisduval states (*l. c.*) that M. Goudot says he found it at Tamatave, but as he (M. Boisduval) has examples from the "pays des Hottentots" he fears that Goudot collected it at the Cape on his way out and afterwards it got mixed with those he took in Madagascar. Mabilie includes it in his work on the Madagascar Lepidoptera, but apparently only on the same doubtful authority.

Neave describes the species as being fond of swamps and marshy ground and having a very feeble flight.

78. *ACRAEA ZITJA*. Pl. XIII, f. 2.

Acraea zitja, Boisduval, Faune. Mad., p. 32, pl. 4, f. 4, 5 (1833);
Guenée, Vinson Voy. Mad. Annexe. F., p. 35 (1864);
Mabilie, Hist. Mad. Lep., 1, p. 108, pl. 11, f. 1, 2 (1885-7);
Aurivillius, Rhop. Aeth., p. 103 (1898); Voeltzkow Exp.,
p. 316 (1909).

♀ *f. radiata*, Guenée, Vinson Voy. Mad. Annexe. F., p. 35, note 8
(1864); Mabilie, Nat. Hist. Mad. Lep., 1, p. 109, pl. 11,
f. 5, 6 (1885-7).

♀ *f. calida* (♀), Butler, Ann. Nat. Hist. (5), 2, p. 288 (1878);
Mabilie, Nat. Hist. Mad. Lep., 1, p. 109 (1887).

♀ *f. rakeli*, Boisduval, Faune. Mad., p. 32, pl. 5, f. 1, 2 (1833).
= *zitja* ♀

Mabilie, Nat. Hist. Mad. Lep., 1, p. 108, pl. 11, f. 3, 4 (1885-7).

♀ *f. fumida*, Mabilie, Ann. Ent. Belge, 23, Bull., p. 106 (1880);
Nat. Hist. Mad. Lep., 1, p. 109, pl. 9a, f. 9 (1885-7).

MADAGASCAR (Fenerive, Kinkuni, Tulear, Fianarantsoa,
Menabe, Morondava, Camp d'Ambre, Antanosy, Diego Suarez);
? NATAL.

Acraea zitja is exceedingly variable both in ground-colour and in extent of markings. Typical examples may be thus described:—

♂. Expanse 36-50 mm. Ground-colour rather dull brick red. F.-w. costa narrowly black; apex and hind margin black (about 2-3 mm. wide, tapering to a point at angle) and deeply indented between the nervules by the ground-colour. Black spots as follows:—One in cell above origin of 2, one on upper part of discocellulars; a discal row of four, the first three in 6, 5, and 4 either separated or contiguous and on a line outwardly more or less convex. The fourth in 3 separated and rather nearer base than the third. A spot in 2 about 2 mm. from the base of that area, and either immediately beneath it or slightly nearer margin a spot in 1b.

H.-w. with a little black at base and a hind-marginal black border about 1.5 mm. wide the inner edge of which may be fairly regular or may be indented between the nervules by the ground-colour. Black spots corresponding to those on the under-side.

Underside. F.-w. ground-colour paler than above. Costa greyish white, the apical and hind-marginal areas striated by the black ends of nervules which are laterally dusted with white, a fine black line round margin.

H.-w. brick red, all the spots more or less surrounded with white, the black ends of nervules laterally dusted with white. A fine black marginal line on which at the end of each nervule stands a black V-shaped mark with its apex on the margin, the spaces between these markings being white. The costa is also narrowly white. The proportion between red and white varies, and some examples might be described as having the ground-colour whitish with broad internervular red marks. Small black spots as follows:—A discal row of nine, the first four, in 7, 6, 5, and 4 forming a line parallel to the apical margin of the wing, the line then curving round so that the next four lie on a line at right angles to the inner margin; the last in 1a is rather nearer base. Some irregular black marks at base of wing. A spot in 8 against the precostal, near it one in 7, two in cell and one at base of 5 and 4 on discocellulars, one in 1c and 1b close together, and a basal spot in 1a.

Head and thorax black, brown tufts on collar. Abdomen black above with reddish yellow lateral spots. Claws unequal.

♀. Like the ♂ but somewhat larger.

Up to the present I have not seen a ♀ of this species resembling the ♂ in colour, but Aurivillius states (*l.c.*) that such ♀♀ exist, and these must therefore be associated with the ♂ type.

A. zitja f. radiata.

♀♀ of this form have a brownish ground-colour and the spots are more prominent. In the f.-w. the space between the discal spots and the hind margin is somewhat paler than the rest, whilst there is a pale curved discal band just beyond the discal spots in the h.-w. Mabille (*l.c.*) figures the underside of a ♂ which he assigns to this form, and in this there is a pale area in f.-w. beyond the discal spots 6, 5, and 4, and in the h.-w. there is much less internervular red than usual beyond the discal spots, also rather less marginal white. He states that intermediates are numerous.

A. zitja ♀ f. *calida*.

This would appear to be merely an aberration. Some of the black spots are absent. The marginal black is reduced to a series of triangular spots prolonged on the nervules. The cell spot is absent, while that at the end of cell is large and rounded. The underside resembles that of f. *radiata* but is paler.

A. zitja f. *rakeli*.

♀ ♀ of this form are rather pale dusky ochreous. In the f.-w. the apical black is 3-4 mm. broad, and the subapical area pale ochreous. The spots are more than usually prominent. In the h.-w. the area just beyond the discal spots is pale ochreous and the inner margin whitish.

A. zitja ♀ f. *fumida*.

This is merely a grey and white form, corresponding to the *lycia* form of *A. encedon*. The greater part of the ground-colour is grey and the spots are much enlarged. In the f.-w. there is a whitish suffusion round the cell spot, and a good deal of white between the nervules in the discal area. The same applies to the h.-w. in which the inner margin is also white.

It may be that these various forms of female are to some extent seasonal, though I have not been able to examine a sufficiently long series of dated examples to form an opinion on this point. If names were given to all the forms presenting slight differences the list would be a long one. In spite of its variability the species is not difficult to recognise owing to the peculiar arrangement of the discal spots and the small triangular white marginal spots in the h.-w.

Mabille describes it as common in Madagascar, frequenting woods, gardens, and cultivated places. It is on the wing during the greater part of the year and appears to have several broods. There are in the Staudinger Collection two examples labelled Verulam, Natal, but this is the only record I have found of the occurrence of the species on the mainland, and failing further evidence should be received with caution.

79. *ACRAEA WIGGINSI*. Pl. XIII, f. 4. Pl. XVI, f. 16.

Acraea wigginsii, Neave, Novit. Zool., xi, p. 326, pl. 1, f. 3 (1904);

Eltringham, Af. Mim. Butt., p. 40, pl. 3, f. 4 (1910).

UGANDA and BRITISH E.AFRICA (Kisumu, Unyoro, Kirembwe, Bulamwezi).

♂. Expanse 46 mm. F.-w. Upper half of costa (from a little beyond base) to just beyond cell, apex, and hind margin,

black. Beyond cell a broad white subapical bar in 10, 9, 6, 5, 4, and part of 3. Below the black area deep golden yellow inclining to red towards base and invading the black outer margin in 1b and 2, so as to leave only a marginal line and black nervule ends and rays. Black spots as follows:—One large spot in cell over origin of 2, one at end of cell on discocellulars, two beyond cell at inner edge of white band in 5 and 4, one near base of area 3, and below it but nearer cell a spot in 2. Below this but more distally placed a spot in 1b, and in the same area a dot (sometimes absent) nearly midway between base and origin of nervule 2. A black linear mark at base of 1b, and a black basal streak in 1a. In some examples a series of internervular yellow spots along hind margin.

H.-w. golden yellow inclined to darker towards base, with a little black powdering in cell and 1c. Black spots as on underside but only faintly indicated towards inner margin. A narrow black marginal border somewhat edentate on the nervules and bearing pale internervular spots.

Underside f.-w. as above but paler, and the apical portion beyond white patch is pearl grey, striated by the black nervule ends which join in a black marginal line, and bearing golden yellow internervular streaks, that in area 6 being much longer than the rest. Costa ochreous with a black dot at base. H.-w. pale creamy ochreous with a narrow black border broken up by white internervular spots, and bordered on its inner edge by a series of golden yellow quadrate internervular spots. An outer series of black spots the first long and transverse in 7 just beyond origin of nervule 7; this followed by a curved series of four small spots in 6-3, and three larger spots more basally placed in 2, 1c, and 1b, and lying in a straight line at right angles to inner margin. Above the last of these a small dot in 1a. In addition there is an inner spot in 7, also transverse, a spot near end of cell, just before origin of 3, and a spot in 1c, 1b, and 1a. Between these two rows of spots and sharply enclosed by them is an irregularly curved band of deep pink, and there is a basal patch of the same colour in 9 and 1c. A black dot in 8 near precostal. Head black with reddish brown collar, thorax black, abdomen ochreous with a blackish dorsal line and indications of dark segmental lines. Claws unequal.

♀. Expanse 48-56 mm.

Resembles the ♂ but area 2 in f.-w. is powdered with black.

This interesting little species was first taken near Kisumu by Mr. C. A. Wiggins, the examples received from him being all females. I found both males and

females in the Tring collection taken at Kibwezi and Kaligire in Unyoro. Another ♂ bears the label Kirembwe, Bulamwezi. All these specimens are smaller than the Kisumu specimens. I have not found it in the very large collections received from Entebbe.

80. *ACRAEA MIRIFICA*. Pl. XIII, f. 5. Pl. XVI, f. 15.

Acraea mirifica, Lathy, Trans. Ent. Soc., p. 2, pl. 1, f. 2 ♂ (1906); Neave, Proc. Zool. Soc., p. 14, pl. 1, f. 3 ♀ (1910).

ANGOLA (Bihé); N.E. RHODESIA (Serenji to L. Bangweolo).

♂. Expanse 41 mm. F.-w. velvety brown black. A band of pale dull ochreous with a slightly metallic lustre crosses the wing beginning at costa just beyond cell about 3 mm. wide and rapidly widening to 5 or 6 mm. as far as nervule 4. Beneath this the colour inclines to pearl grey and the inner edge recedes towards margin, the band being continued about 3 mm. wide, tapering slightly to the hind angle. A row of orange dots along the hind margin. H.-w. velvety brown black with pale ochreous fringe conspicuous on inner margin.

Underside f.-w. cell, base of 3, and whole of wing beneath nervule 3 black. Costa and apical portion pale dull metallic gold. Just before margin the nervules bear diamond shaped black spots which enclose an apical series of crimson spots on the margin.

H.-w. pale dull metallic gold, the nervule ends bearing spindle-shaped black marks which meet in a fine marginal black line and enclose a marginal series of semioval spots of the ground-colour and a submarginal row of crimson spots. Area 9 is also crimson, and a crimson spot at base of 1c. Black spots as follows:—Two in 7, the second beyond origin of nervule 7. Following these three spots in 6, 5, and 4, nearly in a straight line pointing to middle of hind margin. A spot near base of 3, and of 2. Beneath the latter and nearer margin a spot in 1c, followed by one in 1b, rather nearer base. A transverse spot in cell and one on middle discocellular. A subbasal spot in 1c, 1b, and 1a, the last nearer to base.

Head and collar red. Thorax and abdomen, above, black. Claws unequal.

♀. Expanse 48 mm. F.-w. ochreous grey. Costa orange red. Apex black, this colour being continued as a tapering hind-marginal border. Red marginal spots as in ♂. Sometimes the inner edge of this marginal border is dusted with pale ochreous.

Black spots as follows :—One in cell before origin of nervule 2, and one on discocellulars, one in 3 about 3 mm. from end of cell, one in 2 near its base, and beneath it but nearer margin a spot in 1b. In the same area a spot nearer base beneath that in cell.

H.-w. Ground-colour same as in f.-w. but slightly darker in shade, spotted with black as on the ♂ underside. A black hind-marginal border narrower in the middle than at apex and anal angle, its inner edge sometimes dusted with pale ochreous scales.

Underside f.-w. dull ochre-yellow, costa orange, subapical area pale yellow. Black spots as on upperside but smaller, and sometimes a trace of a discal spot in area 5. Black nervule ends and crimson marginal spots as in ♂.

H.-w. as in ♂.

The type ♂ of this species is slightly aberrant, having three white dots in the h.-w. and no red marginal spots in f.-w. It differs in these respects from other Angola specimens, and from those obtained near L. Bangweolo by Neave. The species, as Neave has pointed out, bears a greater resemblance to members of the S. American genus *Actinote* than to any African *Acraea*, especially as it has a rudimentary nervule between 1a, and 1b in the h.-w. It is described as frequenting marshy places and having a very weak flight. The integuments are tough, and if squeezed it exudes a green juice. I have observed that the males are peculiarly liable to become "greasy." The underside of the h.-w. is exceedingly beautiful, having the appearance of being cut from a thin sheet of metal, whilst under the microscope every scale exhibits a beautiful iridescence recalling the appearance of the well-known diamond beetle.

GROUP XIII.

81. *ACRAEA ENCEDON*. Pl. XIV. f. 4

Acraea encedon, Linnaeus, (*Pap.*) Syst. Nat., ed. 10, p. 488 (1758) ;

Mus. Lud. Ulr., p. 244 (1764); Aurivillius, (*A.*) Sv. Vet. Akad.

Handl., 19. 5, p. 56 (1882) ; Trimen, S. Af. Butt., 3, p. 163

(1889) ; Aurivillius, Rhop. Aeth., p. 110 (1898) ; Fawcett

(metam.), Trans. Zool. Soc., 294, pl. 46, f. 4, 5, 6 (1901) ;

Marshall and Poulton, Trans. Ent. Soc., pp. 479-484, etc.

(1902) ; Dixey, Trans. Ent. Soc., p. 151 (1903) ; Proc. Ent.

Soc., p. iii (1906) ; Heron, Trans. Zool. Soc., xix, p. 147

TRANS. ENT. SOC. LOND. 1912.—PART I (JULY) P

- (1909); Neave, Proc. Zool. Soc., p. 27 (1910); Eltringham, Af. Mim. Butt., p. 35, pl. 3, f. 1, p. 36, pl. 8, f. 16 (1910).
 = *encedonia*, Linnaeus, (*Pap.*) Syst. Nat., ed. 12, p. 762 (1767).
 = *sganzini*, Boisduval, Voy. Deleg., 2, p. 590 (1847).
 = *fulva*, Doubleday, Hew. and West., Gen. Di. Lep., p. 140, pl. 19, f. 2 (1848); Staudinger, Exot. Schmett., 1, p. 83 (1885).
 = *lycia*, Wallengren, Rhop. Caffr., p. 22 (1857).
 = *lycia*, var. A., Trimen, Rhop. Af. Austr., p. 103 (1862).
- S. LEONE to E. COAST; CAPE to UPPER EGYPT; MADAGASCAR; PEMBA I.; MAFIA I.
- f. *infuscata*, Staudinger, Exot. Schmett., 1, p. 83 (1885); Aurivillius, Rhop. Aeth. (1898); Eltringham, Af. Mim. Butt., p. 36 (1910).
- f. *alcippina*, Aurivillius, Rhop. Aeth., p. 111 (1898); Lathy, Trans. Ent. Soc., p. 186 (1903); Heron, Trans. Zool. Soc., xix, p. 147 (1909); Eltringham, Af. Mim. Butt., p. 36, pl. 3, f. 3 (1910).
- f. *sganzini*, Boisduval, Faune. Madag., p. 34, pl. 6, f. 6, 7 (1833); Staudinger, Exot. Schmett., 1, p. 83 (1885); Butler, Proc. Zool. Soc., p. 65 (1888); Aurivillius, Rhop. Aeth., p. 111 (1898); Butler, Proc. Zool. Soc., p. 965 (1899); Eltringham, Af. Mim. Butt., p. 36 (1910).
 = *lycia*, Mabilie, Nat. Hist. Mad. Lep., 1, p. 113, pl. 11, f. 11, 12 (1885-7); Trimen, S. Af. Butt., 1, p. 164 (1887).
- f. *lycia*, Fabricius, (*Pap.*) Syst. Ent., p. 464 (1775); Godart, (*A.*) Enc. Méth., 9, p. 239 (1819); Staudinger, Exot. Schmett., 1, p. 83 (1885); Butler, Proc. Zool. Soc., p. 65 (1888); Aurivillius, Rhop. Aeth., p. 111 (1898); Butler, Proc. Zool. Soc., pp. 53, 190, 400 (1898); p. 922 (1900); p. 46 (1902); Heron, Trans. Zool. Soc., xix, p. 147 (1909); Eltringham, Af. Mim. Butt., p. 36 (1910).
 = *brauneri*, Staudinger, Exot. Schmett., 1, pl. 33 (1885).
- f. *necoda*, Hewitson, Exot. Butt. (*Acraea*), pl. 2, f. 9 (1861); Aurivillius, Rhop. Aeth., p. 111 (1898); Eltringham, Af. Mim. Butt., p. 36 (1910).
- f. *daira*, Godman and Salvin, Proc. Zool. Soc., p. 221, pl. 17, f. 3 (1884); Butler, Proc. Zool. Soc. p. 115 (1896); Aurivillius, Rhop. Aeth., p. 111 (1898); Butler, Proc. Zool. Soc., pp. 420, 965 (1899); Eltringham, Af. Mim. Butt., p. 36, pl. 3, f. 2 (1910).
 = *encedon*, ab. ♀, Trimen, S. Af. Butt., 1, p. 165 (1887).

- = *lycia*, var., Butler, Proc. Zool. Soc., p. 66 (1888).
- = *usagarae*, Vuillot, Ann. Ent. Fr., 60, Bull., p. 78 (1891).
- = *caecilia*, Butler, Proc. Zool. Soc., p. 566 (1894).
- = *encedon*, Lanz, Iris, 9, p. 131 (1896).

f. *radiata*, Aurivillius, Arkiv. Zool., ii, 12, p. 4 (1905).

(ANDAMANA, W. AFRICA.)

The above numerous forms of *Acraea encedon* do not appear to be peculiar to any one part of the species' range. The *lycia*, *alcippina*, and *infuscata* forms are more numerous in West African localities than elsewhere, though they seem liable to occur anywhere. The *daira* form does not appear to occur in the west and south. Though the f. *radiata* has not been recorded except from the locality given by Aurivillius, it is not peculiar to that locality, as it occurred with a *lycia* and an *alcippina* form.

A. encedon encedon.

♂. Expanse 48-70 mm. F.-w. orange tawny to golden brown. A little black at base. Apical half black with a rather suffused inner edge and a broad conspicuous white oblique subapical band in 10, 9, 6, 5 and 4 followed by a separate smaller spot in 3. An ovate transverse black spot in cell just beyond origin of 2. A large spot near base of 2 touching nervule 3. Beneath this, but nearer margin, a double spot in 1b, and a small spot in same area shortly before origin of 2 and close to median. Sometimes a spot or streak in 1a, ground-colour usually a little paler than f.-w. beyond the middle. H.-w. slightly black at base, and having a black hind-marginal border about 2 mm. wide narrowing to a point at apex and anal angle. Ends of nervules black. Internervular rays narrow and brown. Black spots as on underside but those near base and inner margin often only faintly indicated.

Underside f.-w. as above but basal half dull brownish and apex and hind margin dark ochreous with black nervule ends and orange ochreous internervular rays. A fine black hind-marginal line. A black spot at base of costa.

H.-w. dull ochreous, marginal border reduced to a narrow black line with just a faint indication of the broader black of upperside. Black spots as follows:—A discal row of eight regular round spots, the first four (in 7, 6, 5 and 4) in a slightly outwardly curved line, the fifth in 3 at the same distance from the margin as the fourth, the sixth in 2 nearer base than the fifth, and the seventh and eighth in 1c and 1b, lying in a

straight line with the fifth at right angles to inner margin. Some black at base of nervures and usually a spot in 8 near precostal. A subbasal in 7, two before middle of cell, two on discocellulars, and a spot in 1c, 1b and 1a, that in 1b further from base than the other two.

Head black with white spots between and behind the eyes, two yellowish tufts on collar. Thorax black with pale dorsal and lateral marks. Abdomen black above with orange ochreous segmental lines and lateral spots, the latter becoming confluent towards the distal extremity. Claws unequal.

♀ resembles the ♂.

f. *infuscata*.

The tawny areas of the typical forms are replaced by smoky brown.

f. *alcippina*.

The h.-w. has a white central suffusion of varying extent.

f. *sganzini*.

The tawny areas of the typical form are replaced by a dusky yellowish colour.

f. *lycia*.

The ground-colour of both wings is white, the black markings being as in the typical form.

f. *necoda*.

The black markings especially in f.-w. are much reduced, the f.-w. apex is only a little darker than the rest of wing and the whole ground-colour is violet grey.

f. *daira*.

The black of apical half of f.-w. and the white subapical band are absent. In some cases the subapical band may be traced as a slightly paler area on the ground-colour. All the black markings much reduced.

f. *radiata*.

Described as allied to the *daira* form but having the nervules on the upperside terminating in broad black triangles, and the basal half of the h.-w. white as in *alcippina*. The apex of f.-w. is not darkened and has no pale subapical band.

The larva and pupa are thus described by Fawcett (*l. c.*):—

“Larva.—Slaty black, with a yellow lateral line above prolegs and claspers. On each segment three deep fine transverse lines enclosing two white patches dorsally and two yellow patches laterally. On the centre black line of each segment are placed six black spines (branched). Head, thoracic legs and claspers black.

"Pupa waxy white with the usual fine black lines on the wing covers and black spots with orange centres on the abdominal segments.

"Feeds on *Commelina*."

Every kind of intermediate form may be observed in a long series. None of the forms seems to be specially characteristic of any particular locality, though the *alcippina* form seems to attain its maximum development in West Africa. Long series of examples have been bred by Mr. Lamborn near Lagos, and the majority of these broods consist of two forms, viz. *infuscata* and *lycia*. The latter are somewhat unusual in having broad suffused orange internervular markings on the hind margin of the secondaries on the underside, also some basal markings of the same colour.

Examples of the *lycia* form may have the ground-colour pale creamy yellow. Another now before me has the f.-w. sepia black except for the subapical white band.

An exceptionally fine ♀ example of the typical form from Chishi I., L. Bangweolo, measures rather over 70 mm. in expanse and has the ground-colour rich red brown.

In Proc. Zool. Soc. 1900, Butler quotes from Crawshay who writes that *encedon* "is a graceful insect . . . alternately flapping its wings and skimming along in its flight very differently to the other *Acraeinae*."

Dr. Longstaff has noted a disagreeable odour in the ♀ when crushed, and Marshall has noted that the insect has a bitter taste.

The species appears to have no very near allies.

GROUP XIV.

82. *ACRAEA* GOETZI. Pl. XIII, f. 14.

Acraea goetzi, Thurnau, Berl. Ent. Zeit. (48), p. 132, 1903.

= *byatti*, Neave, Novit. Zool., xi, p. 328, pl. 1, f. 17 (1904).

S. NYASSALAND (Zomba); GERMAN EAST AFRICA (Langenberg, Unyika, Kondeland); S. TANGANYIKA (Fwambo).

♂. Expanse 42-44 mm. F.-w. with a little black at base of 1a, 1b, and cell. Costa and upper part of cell, apical portion beyond cell, and hind margin, black. A tawny orange subapical patch. Remainder of wing tawny red. The black band dividing the subapical patch from the red central area is broad at costa

(about 3 mm.), and becomes rather suddenly narrower at nervule 4.

H.-w. with a blackish basal suffusion extending to nearly half the length of cell, and in this blackish area are long yellow hairs. Some of the spots of underside faintly indicated. Central area of wing tawny red with indications of spots in 7 and on upper discocellulars. A broad black hind-marginal border about 3 mm. wide at apex, its inner edge rather suddenly angulated at 5, thence traversing the wing nearly at right angles to inner margin making lower half of border about 4 mm. wide.

Underside. F.-w. costa greenish ochreous with a black spot at base. Basal half of wing reddish orange, the distal outline of this area corresponding to that on upper side. Subapical patch pale ochreous inclining to orange at its proximal side. Between this patch and end of cell a black mark extended downwards as a rather suffused line, which forms the inner edge of hind-marginal border. Apical and hind-marginal border greenish grey, the nervules black, and between them broad, tapering, dull orange internervular marks. A fine marginal black line.

H.-w. pale ochreous, areas 8 and 9 red. Base of area 7 pale sage green, followed by two transverse linear black spots enclosing a patch of red. Beneath the outer of these spots a black dot in 6, and a spot on upper discocellulars. Base of cell pale sage green with a round black spot. A spot at extreme base of area 2. Base of 1c red, with a basal, two subbasal, and a discal spot, the latter linear and extending right across the space. Base of 1b and 1a greenish yellow with two black spots in each area. Hind-marginal border, from 5 to the inner margin, broader than on upperside, otherwise of similar shape. Its inner edge marked by a fine brown line; a marginal row of subtriangular greenish white spots resting on a fine black marginal line. On the border the nervules are black edged with whitish, and between them from the marginal spots to the inner edge are broad red marks edged with black. Head black with white marks between and behind the eyes. Reddish tufts on collar. Thorax black with whitish lateral marks. Abdomen black above with yellowish segmental lines and lateral spots. Claws unequal.

♀. Expanse 52 mm. F.-w. marked much as in ♂, but the reddish central area is replaced by tawny orange, darker at base, and the subapical patch pale yellow tinged with orange. A black spot in 1b at base of nervule 2, and a hind-marginal row of dull orange spots larger and more distinct near hind angle.

H.-w. with some blackish at base followed in 2, 1c, 1b, and 1a by pale yellow. Traces of the underside black spots especially on upper discocellulars. Central area pale tawny orange. Hind-marginal border much broader than in ♂, and having pale orange marginal internervular spots.

Underside a rather less brilliantly coloured replica of that of the ♂.

A. goetzi is nearly allied to *A. excelsior*, but there is a slight difference in the structure of the ♂ armature.

83. *ACRAEA EXCELSIOR*. Pl. XIII, f. 12.

Acraea excelsior, E. M. B. Sharpe, Proc. Zool. Soc., p. 192, pl. 17, f. 3 (1891); Karsch, Ent. Nachr., 23, p. 371 (1897); Aurivillius, Rhop. Aeth., p. 104 (1898).

NYASSALAND (Zomba); GERMAN EAST AFRICA; BRITISH EAST AFRICA (Kikuyu, Kenya).

♂. Expanse 40–42 mm. F.-w. black, with a large central brick red patch, edged with lemon-ochreous, and covering the greater part of cell, a small portion of base of 3, more than half of 2, nearly the whole of 1b, and the central part of 1a. A sub-marginal band of lemon ochreous spots divided only by the nervules in 9, 6, 5, and part of 4.

H.-w. with a rather clearly defined black basal suffusion, its outer edge bounded by a straight line at right angles to inner margin and traversing cell just beyond the middle. A conspicuous black linear spot on upper part of discocellulars, above which in 7 is a deep crimson mark marginally powdered with black. Central portion of wing lemon-ochreous, darker from costa to nervule 3, followed by a black hind-marginal border, the inner edge of which runs parallel to apical margin as far as 3, where it becomes suddenly wider and runs straight to the inner margin.

Underside. F.-w. The red area corresponding to that above, costa ochreous dusted with black, remainder black as on upper-side with a similar but slightly larger lemon-yellow subapical patch. Reddish orange marginal internervular marks.

H.-w. lemon-yellow with a black hind-marginal border as on upperside. On this border is a series of broad deep crimson internervular rays each edged with sooty black and tipped with white at the outer extremity. Midway between base and inner edge of marginal border is a crimson black-bordered triangular mark, its base on the costa, and its apex nearly reaching end of cell. Area 9 crimson. Base of 7, cell, and 2 narrowly black,

base of 1c broadly black with two crimson spots, base of 1b and 1a black, the latter with two lemon-yellow spots.

Head black, collar with two red tufts, thorax black, abdomen black above with pale yellowish lateral dots. Claws unequal.

♀ resembles the ♂ but is slightly larger, the colours generally are duller and the basal red is in some cases replaced by yellowish. Both wings have a submarginal border of reddish internervular spots.

By the peculiar and very beautiful pattern of the h.-w. underside *A. excelsior* is easily distinguished from any other species.

84. *ACRAEA MIRABILIS*. Pl. XIII, f. 13.

Acraea mirabilis, Butler, Proc. Zool. Soc., p. 760, pl. 47, f. 1 (1885); in James, Unknown Horn of Africa, p. 236, pl. f. 1 (1888); Aurivillius, Rhop. Aeth., p. 103 (1898); Dixey, Proc. Zool. Soc., p. 11, pl. 1, f. 4 (1900).

CENTRAL SOMALILAND (Bundu Maria, Aoho).

♂. Expanse 40–46 mm. Wings orange-ochreous. F.-w. narrowly black along costa, apex, and hind margin. Subcostal nervure narrowly black. A small black, more or less wedge-shaped mark on upper part of discocellulars. Ends of nervures at apex and hind margin black. Midway between end of cell and apex an ochreous spot extending from costa to middle of area 4, and outlined with black.

H.-w. with a very little black at base of 1c. A narrowly black hind margin, and ends of 3, 4, 5, 6, and 7 rather broadly black. A black spot in cell showing through from underside and the peculiar pattern of the underside faintly indicated.

Underside. F.-w. orange ochreous, costa, apical area and hind margin greyish ochreous, the nervules thereon narrowly black. In the internervular spaces at margin are patches of the ground-colour, that in 6 long and reaching inwardly to the pale discal spot which is as above but paler. A narrow black hind-marginal line, and in 4 and 5 a black internervular ray between pale discal spot and orange marginal marks.

H.-w. Base pale ochre-yellow with some irregular black about bases of nervures. A black spot in 8 some distance from pre-costal, one in cell near base, and one in 1a. A pink flush in 9, 7, 1c, and 1a. Across middle of wing a curved band of pale grey having on both sides a narrow broken black outline, and irregularly flushed with pink, notably in 7, 5, 4, cell, 1c, and 1b. A minute black spot at base of 5 and 4. Following this grey band a parallel immaculate band of pale ochre yellow.

From the distal edge of this band to the margin the ground-colour is pale greenish grey, forming a marginal band some 3.5 mm. wide, its inner edge indistinctly dotted with black between the nervules. The marginal edge narrowly outlined with black, and a submarginal row of narrow linear black marks. Between these and the inner edge of the grey border, a series of internervular deep orange marks.

Head black with an orange collar. Thorax black with orange hairs and two anterior dorsal pale streaks. Base of abdomen black, remainder whitish. Orange lateral spots edged with black. Claws unequal.

♀. Expanse 38–44 mm. Resembles ♂, but ground-colour and markings paler and duller.

The foregoing descriptions are taken from a small series of specimens in the Oxford collection. They differ from examples in the National Collection in having a somewhat richer ground-colour, the paler marks beneath are yellower, and the yellow band in h.-w. beneath is very definitely outlined, whereas in the British Museum specimens the submarginal grey gradually becomes paler proximally towards the dark median band. The Oxford specimens were taken in August, and the British Museum examples in April, so that as suggested by Dr. Dixey (*l.c.*) the differences may be seasonal.

The species is easily recognised by its characteristic underside, and the genitalia are quite distinct.

85. *ACRAEA UVUL.* Pl. XIII, f. 16.

Acraea uvui, Gr.-Smith, Ann. Nat. Hist. (6), 5, p. 168 (1890); Aurivillius, Rhop. Aeth., p. 106 (1898); Neave, Novit. Zool., 11, p. 346 (1904); Heron, Trans. Zool. Soc., xix, p. 147 (1909); Aurivillius, Sjöstedt's Exp. Lep., p. 4 (1910).

= *minima*, Holland, Entomologist, 25, Suppl., p. 89 (1892); Ann. Nat. Hist. 6, 12, p. 249 (1893); Proc. U.S. Nat. Mus., 18, p. 232 (1895).

GERMAN E. AFRICA (Dar-es-Salaam, Kilimandjaro); BRITISH E. AFRICA (Mombasa, Tana R.); UGANDA (Entebbe, Toro).

A. uvui balina, subsp.

Karsch, Ent. Nachr., 18, p. 170 (1892).

CAMEROON (Baliburg, Bitje); ANGOLA (Libollo).

♂. Expanse 30–34 mm. F.-w. black. A subapical patch of tawny red narrow in 10, 9, and 6, and widened to about double

the width in 5 and 4. A central inner marginal patch of the same colour occupying the central part of 1a and 1b, rather more than the basal half of 2, extending slightly into 3 at its base, and into lower part of distal end of cell.

H.-w. with a black triangular basal patch, central area tawny red often inclining to yellow at inner margin, somewhat indenting the basal patch at upperside of cell. Hind margin with a black border about 2 mm. wide, its inner edge deeply indented by the red colour in 4 and 5, above this point somewhat convex, and below running horizontally across to inner margin.

Underside very like that of *bonasia alicia*. F.-w. Basal half pale reddish yellow with dusky indications of the basal black of upperside. The subapical patch ochre yellow, its proximal edge straight or even concave. Remainder of wing brownish black. H.-w. ochre yellow with a greenish tinge at base. Some irregular black at base of wing and a small basal spot in cell. At about the level of middle of cell a transverse band of irregular confluent black spots usually divisible into five rather large subquadrate marks in 7, cell, 1c, 1b, and 1a. Hind-marginal border as on upperside though occasionally slightly narrower. A marginal series of small white subtriangular spots.

Head and thorax black with two brownish tufts on collar. Abdomen black with very minute pale lateral spots and segmental lines. Claws unequal.

♀. Expanse 38 mm. The upperside resembles that of the ♂, but there is usually a marginal row of tawny red spots on the h.-w. Underside extremely variable. In some examples it resembles that of the ♂ though the hind-marginal border of h.-w. is always much broader. In a series of sixteen ♀♀ before me the following variations in the h.-w. may be observed.

(1) Base of 7 and middle of cell pale greenish yellow. In cell and 1c, a basal and a median spot of dull brown. A few indications of black dots. The hind-marginal border is composed of a series of broad internervular reddish marks, each laterally dusted with black, and these are divided by the black nervule ends, each laterally dusted with yellowish. A marginal series of yellowish subtriangular spots. In areas 7, 6, and 5 the reddish marks are followed inwardly by a narrow sharply defined area of dull brown which at nervule 5 suddenly widens out so as to reach as far as end of cell, its outline then being directed straight downwards to anal angle. Remainder of wing pale ochreous.

(2) The border is not followed by a definite brown area but the whole of the rest of wing is dusted with brown scales.

(3) The border is nearly all black except for the marginal spots which are greyish white; area 7 is nearly all black, and the base is black with some ochreous scales in 9, 8, 7, 1b, and 1a. Remainder of wing dark brown.

The series contains various intermediates between the above three forms. All were taken by Neave on Mt. Kokanjero, but a similar variability seems to occur in other localities.

A. uvui balina, subsp.

The type of Karsch's *balina* is either an aberration or its colour has been damaged by an excess of cyanide in the killing bottle. The pale marks are reddish yellow and the dark areas are pale brown. Had I seen only the type I should have been inclined to regard it as merely an aberration, but there are examples having a perfectly normal appearance in the Tring collection, so that, in view of the fact that the structure of the ♂ armature is identical with that in *uvui*, I regard *balina* as the western subspecies of the latter. In appearance it differs from *uvui* principally in the rather smaller extent of the tawny red area, and in the pattern of the hind-marginal border on the underside which is broader and has red internervular marks above the marginal white spots.

A. uvui may be distinguished from *bonasia* and *alicia* by the arrangement of the black at base of f.-w., the outer edge of which runs straight up, continuously with the triangular black of the h.-w., nearly to the upper distal part of cell. It is also much smaller than the other species referred to.

86. *ACRAEA LUMIRI*. Pl. IV, f. 16 (♂). Pl. XIII, f. 15.

Acraea lumiri, Bethune-Baker, Ann. Nat. Hist., 2, p. 471 (1908).

CONGO (Kissegneis to Albert Nyanza); CAMEROON (Asokko, Ja R.).

♂. Expanse 34 mm. Wings orange red. F.-w. with a black costal margin extending into upper half of cell with a slight projection over origin of nervules 2 and 3 and becoming very narrow beyond cell (where it is invaded by the subapical patch) and continued at apex into an apical and hind-marginal border about 2 mm. wide rather broader at apex and narrower at hind angle. From costal black at end of cell, to middle of marginal border an oblique bar of black, cutting off a large rounded subapical

patch of the ground-colour. A little black at base and in basal half of 1a.

H.-w. with a very slight blackish basal suffusion, and a perfectly regular hind-marginal black band 2 mm. wide. Traces of underside spots on discocellulars and near base of 1c, 1b, and 1a.

Underside. F.-w. basal half pale orange red, costa and transverse bar blackish and shaped as above. Subapical patch dark ochreous. Hind margin black, the ends of nervules laterally lined with dark ochreous, and marginal internervular triangular spots of the same colour.

H.-w. greenish yellow at base, followed by some small very irregular black marks, which may be made out approximately as follows:—One in 9, one in 8, one in 7 before end of cell, one on discocellulars more or less confluent with a larger spot in cell. Another spot in cell nearer base, two in 1c, one in 1b with a minute streak at base, and one in 1a. Rest of wing dark ochreous as far as marginal border which is black, inwardly edged with a few brown scales, and bears triangular marginal internervular spots of greyish white.

Head black with grey tufts on collar. Thorax black, abdomen black above with small yellowish lateral spots. Claws unequal.

I have not seen a ♀ of this species. The ♂ differs from allied species in the reduction or absence of basal black in both wings. There are several examples in the Berlin Museum and also at Tring.

87. *ACRAEA BONASIA*. Pl. XIII, f. 11.

Acraea bonasia, Fabricius, (*Pap.*) Syst. Ent., p. 464 (1775); Trimen, (*A.*) S. Af. Butt., 1, p. 174, note (1887); Aurivillius, Ent. Tidskr., 12, p. 202 (1891); Karsch, Berl. Ent. Zeit., 38, p. 195 (1893); Aurivillius (metamorph.), Ent. Tidskr., 14, p. 277, pl. 5, f. 1 (1893); Rhop. Aeth., p. 105 (1898); Neave, Proc. Zool. Soc., p. 26, 1910.

= *eponina* ♂, Cramer, (*Pap.*) Pap. Exot., 3, p. 138, pl. 268, f. A, B (1780); Staudinger, Exot. Schmett., 1, p. 84 (1885); ♀, Iris, 9, p. 202 (1896).

= *serena*, Herbst, (*Pap.*) Nat. Schmett., 4, pl. 82, f. 6, 7 ♂ (non ♀) (1790); Godart, (*A.*) Enc. Méth., 9, p. 232 (♂ non ♀) (1819).

♀ f. *cynthius*, Drury, (*Pap.*) Ill. Exot. Ins., 3, p. 52, pl. 37, f. 5, 6 (1782); Butler, (*A.*) Ann. Nat. Hist. (6), 16, p. 271 (1895).

= *cynthia*, Herbst., (*Pap.*) *Naturs. Schmett.*, 4, p. 198, pl. 80, f. 1, 2 (1790); Godart, (*A.*) *Enc. Méth.*, 9, p. 234 (1819).

= *eponina* ♀ (2nd f.), Staudinger, *Iris*, 9, p. 202 (1896).

PORTUGUESE GUINEA to CAMEROON; FRENCH CONGO; FERNANDO PO; CONGO STATE to L. TANGANYIKA and TORO; GERMAN E. AFRICA (Ruaha R.).

♀ f. *praeponina*, Staudinger, *Iris*, 9, p. 202 (1896); Aurivillius, *Rhop. Aeth.*, p. 105 (1898).

CONGO (Kuilu).

♀ f. *siabona*, Suffert, *Iris*, p. 32 (1904).

TOGO (Misahöhe Stn.).

A. bonasia alicia, subsp.

= *A. alicia*, Em. M. B. Sharpe, *Ann. Nat. Hist.* (6), 5, p. 442 (1890); Aurivillius, *Rhop. Aeth.*, p. 105 (1898); Butler, *Proc. Zool. Soc.*, p. 420 (1899); Heron, *Trans. Zool. Soc.*, xix, p. 146 (1909); Grünberg, *Sitzb. Ges. Nat. Fr.*, p. 150 (1910).

♀ = *cappadox*, Oberthür, *Etud. d'Ent.*, 17, p. 23, pl. 1, f. 2 (1893).

♂ = *planesium*, Oberthür, *l. c.*, p. 24, pl. 1, f. 11 (1893).

CAMEROON (Barombi); CONGO (Ruwenzori); UGANDA (Toro, Entebbe, Sesse I.); BRITISH E. AFRICA (Kisumu, Kenya).

♀ f. *cabiroides*, Poulton, *Trans. Ent. Soc.*, p. 529 (1908).

BRITISH E. AFRICA (Ft. Hall, Kikuyu).

♀ f. *tenelloides*, Poulton, *l. c.*, p. 531 (1908).

BRITISH E. AFRICA (Ft. Hall, Kikuyu).

A. bonasia banka, subsp. nov.

ABYSSINIA (Banka, Malo).

A. bonasia bonasia. Pl. VI, ff. 11, 12 (larvae).

♂. Expanse 40-44 mm. F.-w. warm black. A tawny red oblique subapical patch about 2 mm. wide in 10, 9, 6, 5, and 4. Lower half of cell, base of 3, proximal half of 2 (except a small portion at base) and distal central part of 1b, and 1a tawny red. Usually also a red streak just beneath median which may extend from wing base to origin of 2, or may be reduced to a small mark.

H.-w. with a triangular basal patch of greyish black, the outer edge of which is roughly continuous in a straight line with the adjacent black of the f.-w. Central portion of wing tawny red. Hind margin black about 3 mm. wide slightly invaded by the discal red in areas 3 and 4.

Underside, f.-w. paler and duller than above, the costal black not reaching to base, and the basal inner marginal black only represented by a blackish mark at base of 2, and some irregular black beneath it in 1b. The subapical patch is ochre yellow, a slight ochreous powdering along the nervule ends, and a series of acutely triangular ochreous marginal internervular spots.

H.-w. Base pale sage green with a black basal spot in 9, 8, cell, and 1c. The green area is closely followed by a series of black spots roughly arranged in a double line and usually enclosing small red marks in 7, cell, and 1c. These spots are very variable and irregular, sometimes being coalescent and sometimes fairly well separated. Discal area ochre yellow. Marginal border rather variable. Usually about 2 mm. wide as far as nervule 3, then about 3 mm. wide tapering to inner margin. This border may be quite black with pale ochreous triangular internervular marginal spots, or the nervures may be laterally powdered with ochreous producing a striated appearance. One example from Ruaha Valley, German E. Africa, has red streaks between the nervules.

Head black with white lines behind the eyes and two brown tufts on collar. Thorax black with some whitish scales. Abdomen black above with yellowish segmental lines and lateral spots. Claws unequal.

♂. ab. The black replaced by brown, and all the reddish tawny areas replaced by dull ochreous. (1 example. Mus. Oxon., Lagos.)

♀. f. 1. Like the ♂ but rather larger (about 48 mm.). The h.-w. margin broader, especially beneath.

♀. f. 2. F.-w. dull smoky grey, subapical patch very pale ochreous. A whitish inner marginal patch suffused with grey, the greater part of which in 1a and 1b lies rather beyond the middle, extending upwards into base of 3. Indications of pale triangular spots on margin. H.-w. base dull grey, with black spots of underside showing through, central area pale ochreous, remainder dark grey with faint triangular marginal spots and indications of darker internervular rays.

Underside. F.-w. with a basal dull reddish grey area corresponding to the pale tawny red in f. 1. Subapical patch dusky white. Margin striated by blackish nervule ends laterally powdered with whitish, and elongated whitish triangular internervular marks laterally powdered with blackish. H.-w. base pale grey with the usual black spots, remainder dusky white, the marginal border striated similarly to that in f.-w.

Every gradation of intermediate between these two forms of ♀ may be found. An intermediate was figured by Drury (*l. c.*) and named *A. cynthius*. The larva is figured by Aurivillius (*l. c.*) and thus described :—

Bluish white above with two narrow dark dorsal lines and a broad black longitudinal line on each side between the dorsal and upper lateral spines. The spines of segments 1–3 and 11–13 are quite black, the remainder only more or less blackish towards the point.

Large numbers of this species have lately been bred by Mr. W. A. Lamborn near Lagos, and the specimens together with examples of the larvae and pupae are now in the Oxford Museum.

The larvae are dimorphic. That corresponding to Aurivillius' description, is, at Lagos, comparatively rare, the commoner form being darker in colour and having darker markings. From notes supplied by Mr. Lamborn I am able to furnish the following description of the paler form of larva in its various stages.

A company of larvae found on August 10, 1911, consisted of individuals of an average length of 1·4 cm. The ground-colour, legs, and underside were bluish white. The spines of the first segment black, those of the second sometimes only partly black. Spines of last two segments black, the remainder white. These larvae moulted about two days later, after which the average length was 2 cm. The ground-colour remained the same but longitudinal whitish stripes appeared, the legs and underside being of the same colour. The first and last two rows of spines were black, the third row whitish with black apices, the remainder whitish with black hairs. About the 17th, moulting again took place, after which the average length was 2·6 cm. The principal change from this stage to pupation was an increase in depth of the ground-colour, which became bluish green. When fully grown the larvae had an average length of 3·2 cm., and by the 21st many were suspended for pupation.

The darker form of larva, Pl. VI, f. 12, has a bluish white ground-colour, two dorsal blackish bands, bordered on the lower side with yellowish, and a yellowish subspiracular band. The sublateral spines, and those of the six central segments are whitish with black hairs. The lower part of head is black and the upper part brownish. Legs yellowish.

I am of opinion that the imagines do not present any marked differences corresponding to the two forms of larvae.

A dipterous parasite of the family *Tachinidae* emerged from some of the larvae reared by Mr. Lamborn.

A. bonasia ♀. f. *praeponina*, Staud.

After a careful examination of Staudinger's type I cannot regard this as other than a form of *bonasia*. It has the blackish brown of f.-w. inner margin turned up to meet that from the costa just beyond origin of 2, whilst the h.-w. margin on underside is narrower than in ordinary *bonasia* ♀♀, and the brown colouring is so dark and complete that it appears hardly at all striated. There are triangular whitish marks on the border and the suppression of the striation gives it somewhat the appearance of *uvui*. Staudinger's description refers to the black spots making an entirely different pattern to those in *bonasia* (*eponina*). They are however much the same, but a little more accentuated. There are three ♀♀ examples in the Staudinger collection, two from Kuilu and one only vaguely described as from the Congo Region.

A. bonasia ♀. f. *siabona*.

This form is described as having the f.-w. apical and marginal black broader than in typical examples. The subapical patch yellow, and the remaining reddish areas duller than usual. On the h.-w. underside the marginal band is twice as broad as in typical forms and the nervures heavily dusted with black. On the inner edge of the marginal band are triangular blackish spots in 1b, 2, 3, and 4, divided by the nervures, having their apices directed towards the base. These spots are produced into narrow rays reaching the cell in 3 and 4. In 5, 6, and 7 are long acute angled spots. Basal and discal spots very small. (1 ♀ from Misahöhe, Togo.)

A. bonasia alicia, subsp.

♂. Expanse 30-40 mm. F.-w. costa, outer half of wing, and hind margin black. An oblique subapical patch of tawny red in 10, 9, 6, 5, and 4. Inner margin black on both sides of submedian as far as the middle, but this black *does not*, as in *bonasia*, *extend upwards as far as nervure 2*. H.-w. with a triangular black mark at base extending rather beyond middle of cell much as in *bonasia*. Central area of wing tawny red varying to yellowish, especially towards inner margin. Hind margin with a black band about 3 mm. wide somewhat invaded by the red colour in areas 4 and 5.

Underside. F.-w. as above but reddish colour paler, and the subapical patch ochre-yellow. H.-w. greenish yellow at base,

with one or two basal black spots, followed by a transverse row of irregular somewhat confluent spots, sometimes, though rarely, forming a double line enclosing small red marks. Central area dark ochreous (darker than in *bonasia*). Marginal border black corresponding in shape to that on upperside and having yellowish marginal internervular spots. This border is sometimes, though rarely, striated.

Head and thorax black, with reddish tufts on collar. Abdomen black above with small yellowish lateral stripes.

Some examples of the ♂ have the paler areas of both wings orange yellow. Specimens of this coloration have been received from Kilimandjaro and the Tiriki Hills. Occasional examples have the subapical patch continued to the costa where it is nearly as broad as elsewhere.

♀. Expanse 36–44 mm. Extremely variable. The following forms may be observed in a long series:—

f. 1. Closely resembles the ♂. Only slightly paler and duller. On the h.-w. there is a marginal row of triangular spots of the ground-colour. Underside paler and duller. The h.-w. margin very little broader than that of the ♂, its inner edge curved, nearly parallel to apical margin as far as nervule 4 where the border becomes suddenly wider, and its edge runs nearly straight, and at right angles to the inner margin. Large triangular whitish spots.

f. 2. *tenelloides*.

Pale central area of f.-w. light orange ochreous, subapical patch yellow. H.-w. pale yellow, rather darker towards costa. A mere trace of basal black. Marginal border very narrow, its inner edge slightly suffused with orange and its outer edge bearing pale yellow triangular spots.

Underside very pale. F.-w. basal half pinkish ochreous. A trace of a discocellular spot. Costal, apical, and hind-marginal area pale dusky ochreous very faintly striated by the nervule ends. Subapical patch pale yellow.

H.-w. pale creamy ochreous. Traces of a few small black spots near base. Marginal border pale dusky ochreous with traces of the usual triangular spots and their internervular rays.

♀. f. 3. *cabiroides*.

Upperside almost exactly like that of the ♂ but with traces of reddish marginal spots on h.-w. Underside. F.-w. paler than above. Subapical patch pale ochreous. Hind margin from costa to angle striated in the following manner:—The nervule ends blackish and with a line of greyish ochreous on each side.

Between the nervules are elongated triangular orange ochreous markings, their bases occupying the whole internervular space at margin and their sides outlined with black. H.-w. like that of ♂ except for the marginal border. This is rather broader as far as nervule 5, where it becomes still wider nearly reaching end of cell. From 5 to the inner margin its inner edge is not straight but convex. The nervules on the border are blackish. The triangular marginal spots are large, whitish, and edged with black. This black edging is produced inwardly in a double internervular ray, and all the internervular spaces beyond the marginal spots are dusted with brown.

♀. f. 4. Ground-colour much duller than in ♂ and apical patch yellowish. The h.-w. marginal border on the upperside is almost double the width of that in the ♂, and there is rather more basal black. A broad yellowish suffusion about the inner margin, and yellowish marginal spots. Underside of h.-w. like that in *cabiroides* but marginal border still wider, reaching the cell and only very little narrower towards apex.

In addition to the above forms many intermediates occur. An interesting example now before me is perfectly intermediate between *tenelloides* and *cabiroides*, having the pale areas of the upperside nearly as yellow as in the former, whilst the h.-w. underside exhibits a similar pattern, but somewhat less developed than in the latter.

A. bonasia banka, subsp.

This, the Abyssinian subspecies, is distinguished by having rather more black on the upperside, and the inner marginal basal black of the f.-w. is slightly produced upwards so as to touch nervule 2. The dark areas of the underside are quite black, and in the h.-w. the subbasal spots are large and coalescent, forming an almost continuous black band.

Forms intermediate between *bonasia* and *alicia* are rare, but a ♂ example from Toro now before me has the f.-w. inner marginal basal black slightly produced upwards though not quite reaching nervule 2.

♂♂ from the Kikuyu Escarpment generally have the h.-w. yellow on the upperside, with the usual black markings. In a note on the species (P. Z. S., p. 922, 1900), Butler states, quoting from a letter from Mr. Crawshay, that the insect "does not succumb to 90 per cent. cyanide in an hour—cyanide which suffocates every other Lepidopteron in twenty-five to thirty seconds." It is to be

assumed that the "every" does not include all other *Acraeas*, as many have great tenacity of life. The above collector also reports that the species was found "simply in swarms, on the mud on the rocks in the bed of the stream."

88. *ACRAEA SOTIKENSIS*. Pl. XIII, f. 8.

Acraea sotikensis, Em. M. B. Sharpe, Proc. Zool. Soc., p. 634, pl. 48, f. 1 (1891); Oberthür, Etud. d'Ent., 17, p. 23 (1893); Aurivillius, Rhop. Aeth., p. 105 (1898); Neave, Novit. Zool., 11, p. 346 (1904); Proc. Zool. Soc., p. 26 (1910).

ANGOLA (Calweha, Bolombo, Bango, Bailundu); CONGO (Katanga); KONDELAND; N.E. RHODESIA (Chinsali); BUKOBA; RUTSCHURU (90 km. W. of Albert Nyanza); UGANDA (Unyoro, Toro, Mondo); BRITISH E. AFRICA (Nandi, Machakos); ABYSSINIA (Djala, Gardulla, Abassi).

f. *supponina*, Staudinger, Iris, 9, p. 204 (1896); Aurivillius, Rhop. Aeth., p. 105 (1898).

KATANGA; "W. AFRICA; CONGO" (Stand.).

f. *katana*, f. nov.

= *sotikensis*, Neave, Proc. Zool. Soc., p. 26 (1910) (part).

KATANGA.

A. sotikensis rowena, subsp. nov.

= *sotikensis*, Heron, Trans. Zool. Soc., xix, p. 146 (1909).

MT. RUWENZORI.

A. sotikensis sotikensis.

♂. Expanse 42-50 mm. F.-w. rich sepia black. Lower half of cell (sometimes only basal part), basal half of 2, and central half of 1b and 1a, orange red. A subapical patch of pale ochre yellow of somewhat variable shape and size in 11, 10, 9, 6, 5, and 4.

H.-w. with a triangular black patch at base with slight indications of the black spots of underside. Central area of wing orange-red invading more or less deeply the marginal border in 4 and 5. Marginal border dark sepia with faint indications of underside pattern. This border is about 3-4 mm. wide from costa to nervule 3, where it becomes suddenly wider, its inner edge being straight and at right angles to inner margin. This straight edge is often clouded with brownish red. In some examples there is a hind-marginal row of small reddish yellow spots.

Underside. F.-w. much as above but the red colour duller

and occupying the whole basal half of the wing, except costa. A more or less curvilinear spot in 1b, just beyond origin of 2. In margin there are reddish brown internervular rays. The pale yellow subapical patch extends narrowly along both sides of nervule 5 to margin, and along the upperside of 4.

H.-w. Pale sage green at base with numerous black spots on an area corresponding to the triangular black of the upperside. The more distal of these spots are in some cases more or less confluent, but the following can usually be distinguished :— One in 9, 8, and 1c at base. Two in 7 close together, one at base of 6, one on discocellulars, three in cell (sometimes only two), two in 1c, 1b, and 1a. The more distal spots are arranged roughly in two parallel rows enclosing crimson marks in 7, cell, and 1c. Central portion of wing pale pink. A broad hind-marginal blackish border, its inner edge corresponding in shape to that on upperside. On this border the nervules are black, sometimes with a whitish lateral powdering. Between the nervules a series of marginal triangular whitish spots, produced into reddish rays, each spot and its rays outlined with black.

Head and thorax black. Red tufts on collar. Abdomen black above with pale ochreous segmental lines and lateral spots. Claws unequal.

♀. Expanse 50-58 mm. May be coloured very like the male or may be distinctly paler and duller. Occasionally the f.-w. subapical spot is whitish. There is usually a well-marked row of reddish triangular internervular spots in h.-w. Underside as above but paler and duller.

A. sotikensis f. *katana*.

This form is distinguished by having the orange red areas deeper in tint, whilst the f.-w. subapical spot is usually of the same red colour instead of pale ochreous. There seems nearly always to be a marginal row of reddish spots in h.-w.

♀ like ♂ but larger and duller. F.-w. subapical spot sometimes yellow or even whitish. Though scarcely quite constant, the form is specially characteristic of the Katanga region.

A. sotikensis f. *supponina*. Pl. IV, f. 15 (♂).

Amongst numerous examples of the *katana* form there are some which present a remarkable difference in the arrangement of the black spots in the h.-w. underside. Those in areas 4, 5, 6, and 7 projecting downwards in a straight line nearly at right angles to the costa, instead of lying almost parallel to the sub-basal spots. On examining the type of Staudinger's *A. supponina* I found this arrangement of spots to be its most distinguishing

feature, and in other respects it agrees with examples taken by Neave in the Katanga region. There are also intermediate examples before me from the same locality. I have no hesitation therefore in regarding *supponina* as merely another form of *sotikensis*.

A. sotikensis rowena, subsp.

Distinguished from typical form by having rather more black on f.-w. and the central area of h.-w. is pale ochreous tinted with orange on the upper half. H.-w. marginal spots rarely present. When visible they are pale ochreous and minute. The central pale area of h.-w. underside is very pale yellow without any trace of pink. I have not seen the ♀.

Four ♂♂ Mus. Tring. Similar forms in Mus. Brit., Mt. Ruwenzori.

Intermediate examples between the three forms described above may occasionally be found. Some examples from Toro, Unyoro, and Kondeland, in the Tring collection, have the red colouring very pale, and the red of f.-w. cell is a mere streak. The h.-w. hind margin has well-developed spots.

89. *ACRAEA CABIRA*. Pl. XIII, f. 9.

Acræa cabira, Hoppfer, Monatsb. Akad. Wiss. Berlin, p. 640 (1855); Peters. Reise. Ins., p. 378, pl. 23, f. 14, 15 (1862); Staudinger, Iris, 9, p. 205 (1896); Aurivillius, Rhop. Aeth., p. 106 (1898); Aurivillius, Sjöstedt's Exp., p. 4 (1910).

= *A. apecida* var. *flavomaculatus*, Lanz, Iris, 9, p. 130 (1896).* CONGO (Stanley Pool); UGANDA (Unyoro); BRITISH E. AFRICA (Kibwezi, Kavirondo); GERMAN E. AFRICA (Ukerewe I., Muansa, Mamba); RHODESIA; NYASSALAND (Kigonsera, Bandawe); NATAL; TRANSVAAL; PORTUGUESE E. AFRICA (Delagoa B.); CAPE COLONY.

f. *apecida*, Oberthür, Etud. d'Ent., 17, p. 23, pl. 2, f. 15 (1893); Staudinger, Iris, p. 206 (1896); Aurivillius, Rhop. Aeth., p. 106 (1898); Butler, Proc. Zool. Soc., p. 53 (1898); Neave, Novit. Zool., 11, p. 346 (1904); Proc. Zool. Soc., p. 27 (1910).

* Except that the yellow band in h.-w. upperside is broader in this form than in typical *cabira*, I cannot find any particular difference. The width of this band is so variable in a long series that there seems no advantage in retaining this form name.

= *cabira*, var., Trimen, S. Af. Butt., 1, p. 174 (1887); Rogenhöfer in Baumann, Usambara, p. 326 (1891).

GERMAN E. AFRICA (Usambara); CONGO (Luangwa Val., Katanga).

Also liable to occur with the typical form in other localities.

f. *abrupta*, Grünberg, Sitz. Gesell. Natur. Freunde, p. 163, f. 2 (1910).

SESSE I., V. NYANZA.

f. *natalensis*, Staudinger, Iris, p. 206 (1896); Gooch (metamorph.), Entomologist, 14, p. 1 (1881); and Trimen, S. Af. Butt., p. 174 (1887); Aurivillius, Rhop. Aeth., p. 106 (1898); Sjöstedt's Exp., p. 4 (1910).

= *cabira*, Wallengren, Rhop. Caffr., p. 21 (1857); Staudinger, Exot. Schmett, p. 84, pl. 33 (1885); Trimen, S. Af. Butt., 1, p. 173 (1887).

= *cynthia*, Trimen, Rhop. Afr. Austr., p. 108 (1862) (part).

NATAL; DELAGOA BAY; MANICALAND; GERMAN E. AFRICA (Kilimandjaro).

f. *karschi*.

= *viviana* f. *karschi*, Aurivillius, Rhop. Aeth., p. 106, fig. 13 (1898).

CAMEROON (Baliburg); BRITISH E. AFRICA (Mt. Kenya, Mori R.).

f. *biraca*, Suffert, Iris, p. 33 (1904).

GERMAN E. AFRICA (Langenberg); RHODESIA (Chirinda).

A. cabira cabira.

♂. Expanse 36–42 mm. F.-w. brownish black. The subcostal nervure reddish at its base. A subapical oblique patch of pale ochreous about 2 mm. wide in 11, 10, 6, 5, and 4. A central patch of pale ochreous occupying the lower half of cell, a small part of base of 3, the basal half of 2, the upper basal and entire central part of 1b, and the middle of 1a. In typical examples this patch is of such a shape that it projects along the median in a finely drawn out point to the base.

H.-w. with a small triangular greyish basal patch with indications of the black spots of the underside. Central area pale ochreous. A broad black hind-marginal band 2·5 mm. wide at apex, its inner edge running parallel to the apical margin as far as 4, where it turns inwards, traversing the wing nearly at right angles to the inner margin. On this border faint lighter and darker lines indicate the pattern of the underside.

Underside. Basal half reddish, darker at base of cell. Costa dusky ochreous. Subapical patch pale ochreous, and between

it and cell some irregular black partly projecting into cell, wide at costa, narrow at base of 3 and turning downwards to inner margin to form a suffused inner edge to the hind-marginal border. The latter greyish ochreous with black nervule ends and dark ochreous elongate triangular internervular marks edged with black. A fine black line round margin. Some irregular blackish along basal half of nervure 1.

H.-w. greenish grey at base with a black spot in 8, and some black at base of nervures. Next to the basal grey two spots in 7 enclosing a red mark and a dot at base of 6. A spot on upper discocellular joined to two in cell, the three enclosing a red mark. A large spot in 1c, and a smaller one in 1b and 1a. (These spots are sometimes divided, and there may be an additional spot in cell so that the spots form roughly a double row ; and there is sometimes a basal spot in cell.) Central area pale ochreous. Hind-marginal band shaped as above, its inner edge marked by a brown line, the nervule ends black, edged with pale ochreous, a fine black line round margin, on which are subtriangular pale ochreous spots, each produced into a brown ray and edged with black.

Head black, with pale marks behind and between the eyes. Brownish tufts on collar. Thorax black with a few pale marks. Abdomen black above with pale yellowish lateral spots and segmental lines. Claws unequal.

♀. Expanse 56-60 mm. Except for its much greater expanse of wing resembles the ♂. Often an elongate spot in middle of cell. The h.-w. marginal border is much broader, and bears pale ochreous marginal spots, together with more distinct indications of the underside pattern. The basal and subbasal spots of h.-w. underside are larger and separated so that the following may be distinctly observed :—One at base in 9, one in 8, two in 7 enclosing a red mark, one on upper part of discocellulars, two in cell enclosing a red mark, and a basal spot. A basal and two subbasals in 1c, the latter enclosing a red mark, one in 1b, and two in 1a.

A. cabira f. *apecida*.

This form differs in having the central areas of both wings, and to some extent the f.-w. subapical patch, reddish yellow. Nearly every intermediate shade of colour may be observed in a long series.

A. cabira f. *abrupta*.

This form is described by Grünberg from Sesse I. in the V. Nyanza. It differs principally in the absence of striations

on the h.-w. marginal border on underside, the border being black with white or whitish marginal spots.

A. cabira f. *natalensis*.

This form differs from typical examples in that the f.-w. central pale area does not extend in an elongate spur to the base, but is merely sharply angulated near origin of nervule 2. The form is not confined to the Natal region, and the pale areas may be either pale ochreous, reddish yellow, or of an intermediate tint.

A. cabira f. *karschi*

Differs from the typical form in having the f.-w. pale inner marginal patch with nearly parallel sides and not extending towards base.

A. cabira f. *biraca*.

Differs from typical examples in that the central pale area of the f.-w. occupies the lower half of the cell and the whole of area 1b to the base. The specimen described by Suffert is a ♂ taken at Langenburg, L. Nyassa. Some examples from Chirinda now in the Oxford collection show the same feature.

The following descriptions of the larva and pupa are taken from Trimen's work (*l. c.*).

"Larva.—Bluish green with yellow ochreous longitudinal lines and transverse bands. Head, and segments 2, 3, and 4 yellowish brown. A dorsal and two subdorsal longitudinal lines. From the transverse band on each segment arise the spines, which are rigid and of moderate length, black on the second, twelfth, and thirteenth segment, yellow ochreous on the rest. The band is marked on each side with a bluish green subdorsal spot and a black spiracular ring.

"Feeds on a woolly fleshy leaved weed like a *Lamium*, common in clearings.

"Pupa.—Whitish green, with the usual pattern of the markings slightly marked, the dorsal markings more pronounced than the others."

A. cabira is extremely variable in ground-colour and in the extent to which the f.-w. central pale area is produced towards the base. So far as I am able to judge no particular form is definitely associated with a particular locality. In a long series from Chirinda, now in the Oxford collection, the f.-w. pale central patch is very variably extended towards the base, and in some cases little is left of the basal black but a streak in the cell and

some black powdering about the submedian nervule. Others have a mere trace of the triangular basal black in the h.-w. Generally speaking these *Chirinda* specimens have a tendency to a reduction of basal black, and in most cases the pale areas are of a pale reddish yellow intermediate between typical examples and the *apocida* form.

Several large ♀ examples from the Luangwa Valley have the pale areas of both wings orange-colour except the f.-w. subapical patch, which is very pale lemon-ochreous. One ♂ from Machakos has all the pale areas nearly white. All grades of intermediates are found, and the sole constant feature which distinguishes the species from *viviana* is the fact that the basal black of the f.-w. is more or less indented by the yellow or red central ground-colour at or near the origin of 2, and extends more or less along the inner margin, whereas in *viviana* the black is narrowest at the inner margin, its distal edge proceeding *upwards and outwards* to nervule 2, and forming a line continuous with the outer edge of the h.-w. basal black.

Aurivillius places the form *karschi* under *viviana*, but if the latter is really a separate species then *karschi* belongs rather to *cabira*, if one may judge from a series of preparations of the ♂ armatures. It may be distinguished from *viviana* by the smaller extent of the pale areas.

90. *ACRAEA VIVIANA*. Pl. XIII, f. 10.

Acræa viviana, Staudinger, Iris, 9, p. 204 (1896); Aurivillius, Rhop. Aeth., p. 106, f. 12 (1898); Heron, Trans. Zool. Soc., xix, p. 147 (1909).

= *cabira*, Neave, Novit. Zool., xi, p. 346 (1904).

CAMEROON (Ja River); CONGO (Vivi, Zongo, Mokoange, Bangasso, Sassa); UGANDA (Toro, Entebbe, Kampala, Pt. Alice); GERMAN E. AFRICA (Bukoba).

♂. Expanse 48–50 mm. F.-w. black. Subcostal and median nervures reddish. An oblique subapical patch of pale or dark ochreous in 11, 10, 9, 6, 5 and 4. An inner marginal patch of the same colour occupying nearly the whole of area 1a except a small part at base and margin, the middle part of 1b, the basal half of 2 and usually just extending into cell and base of 3. The basal black which remains in 1b has its outer edge straight and pointing slightly outwards, meeting the median at the origin of 2, and is not indented or divided along the median as in *cabira*.

H.-w. with a more or less triangular basal black area extend-

ing barely to middle of cell with indications of the spots of underside. Central area dark or pale ochreous. A hind-marginal border of black some 4 mm. wide at apex, its inner edge running straight downwards to nervule 4 where it makes a sharp curve thence becoming suddenly rather broader at 3, traversing the wing nearly at right angles to inner margin.

Underside. F.-w. slightly reddish at base (much less red than in *cabira*). The remainder of wing a pale replica of the upperside, the apex and hind margin striated by black nervules laterally powdered with pale grey, and internervular brownish marks laterally lined with black.

H.-w. grey at base. Area 9 dark red, a black spot in 8, two in 7 enclosing a red mark one on middle discocellular closely followed by two in cell, the three together enclosing a red mark, a third spot in cell nearer base. A basal and a subbasal spot in 1c sometimes enclosing a very little red, a spot in 1b (sometimes absent) and two in 1a. Some irregular black at base of nervures. Central area of wing pale ochreous to creamy white. Hind-marginal border similar in shape to that on upperside and marked exactly as in *cabira*, i. e. the nervules black, laterally lined with pale ochreous, and between the nervules pale triangular marginal spots produced inwardly into brownish marks each lined with black. Some brownish scales along inner edge in 3, 2, 1c, 1b and 1a.

Head black with a few whitish markings, two brown tufts on collar, thorax black with some pale lateral marks, abdomen black above with yellowish segmental lines and lateral spots. Claws unequal.

♀. Expanse about 56 mm. Resembles the ♂, but the h.-w. marginal border is somewhat broader, and has a mere trace of paler marginal spots, and of the striations of the underside pattern.

A. viviana is easily distinguished from *cabira* by the shape of the basal black in the f.-w., the outer edge of which in 1b passes nearly straight up, inclining slightly outwards from the submedian to the origin of 2. It is rarer in collections than is *cabira*, and I have not had an opportunity of examining very long series, but so far I have seen no intermediates between the two species. Also the genitalia though of a very simple structure appear to differ. The species occurs as far west as Cameroon. It has not been found in the large consignments lately received at Oxford from Mr. Lamborn from Lagos, and I

think it may safely be assumed not to occur there. It is found in Angola and in the Congo State, and extends north and east to Ruwenzori, Toro, and Entebbe.

91. *ACRAEA ACERATA*. Pl. XIII, f. 7.

Acraea acerata, Hewitson, Ann. Nat. Hist. (4), 13, p. 381 (1874); Exot. Butt. (*Acraea*), pl. 7, f. 44 (1875); Butler, Proc. Zool. Soc., p. 730 (1895); Aurivillius, Rhop. Aeth., p. 104 (1898).

f. *vinidia*, Hewitson, Ent. Mo. Mag., 11, p. 130 (1874); Exot. Butt. (*Acraea*), pl. 7, f. 45, 46 (1875); Staudinger, Exot. Schmett, 1, p. 84 (1885); Karsch, Berl. Ent. Zeit., 38, p. 195 (1893); Aurivillius (metamorph.), Ent. Tidskr., 14, p. 277, pl. 4, f. 3, 3a, 3b (1893); Rhop. Aeth., p. 105 (1898); Heron, Trans. Zool. Soc., xix, p. 147 (1909).

Abundant over the whole region from Ashanti to German E. Africa.

f. *brahmsi*, Suffert (*A. brahmsi*), Iris, p. 15, pl. 3, f. 4 (1904).
CAMEROON; NIGERIA.

f. *diavina*, Suffert, Iris, p. 31 (1904).
CAMEROON.

f. *tenella*.

Rogenhofer, Ann. Mus. Wien., 6, p. 457, pl. 15, f. 1 (1891); Butler, Proc. Zool. Soc., p. 114 (1896).

= *abbotti*, Holland, Entomologist, 25, Suppl., p. 89 (1892); Proc. U.S. Nat. Mus., 18, p. 233, pl. 7, f. 1 (1895); Aurivillius, Rhop. Aeth., p. 105 (1898).

NYASSALAND; GERMAN E. AFRICA; BRITISH E. AFRICA; ABYSSINIA.

Hewitson published the description of *acerata* in May and that of *vinidia* in November 1874. In the description accompanying the figures in Exot. Butt. he expresses the opinion that *acerata* is a form of *vinidia*, as no doubt it is, but as the name *acerata* was published first it would appear that it must stand as that of the species. As the *vinidia* f. is much the commoner I will describe it first, afterwards indicating the differences presented by the other forms.

A. acerata f. *vinidia*.

♂. Expanse 36–42 mm. Wings orange tawny to pale ochreous. F.-w. base of 1a, 1b, costa, and the greater part of cell brown black.

An apical and hind-marginal black border about 3 mm. wide. At and beyond end of cell there extends from costa a more or less wedge-shaped black mark, its narrower and lower portion being connected with the hind-marginal black, thus enclosing a subapical patch which may be of the ground-colour or paler. There is sometimes a rather large black spot in 2 close to median and a smaller one below it, and rather further from margin in 1b.

H.-w. may show traces of the spots of underside. Base slightly blackened, hind margin with a black border 2 to 3 mm. wide, the inner edge of which may be nearly parallel to hind margin or it may be somewhat angulated at 3, thus giving the central pale patch a slightly quadrate appearance.

Underside f.-w. like the upper but paler and with the black of base and cell reduced to a spot in cell. The subapical patch paler than the ground-colour. The apex and hind margin have a series of triangular reddish-yellow spots.

H.-w. pale ochreous with a black or very dark brown hind-marginal border bearing triangular reddish marginal spots, the apex of each being produced into a deep black ray, which does not however extend beyond the black border. Numerous small black spots usually as follows:—One in 8 against precostal, two in 7, sometimes one in 6, a streak on discocellulars, and a dot at base of 4 (there is apparently never a spot in 3), one at base of 2, two in cell, and two in 1c, 1b, and 1a. Some irregular black at base of nervures and sometimes a few basal red marks.

Head black with a pale mark behind each eye, and two reddish tufts on the collar. Thorax black. Abdomen black above with orange lateral and whitish dorsal spots. Claws unequal.

♀ resembles ♂, but ground-colour slightly duller, or in some cases much paler.

A. acerata acerata. Pl. VI, f. 13 (larva).

Differs from *acerata vinidia* in having a slightly paler ground-colour, and in the fact that the black wedge-shaped mark in f.-w. is not connected at its lower end with the hind-marginal black, so that the subapical patch is continuous with the ground-colour.

f. tenella.

This is an extreme eastern form of the species. It is characterised by having a much paler ground-colour. The black margins are slightly narrower than in the western forms, and marginal spots are usually visible on the upperside. Scarcely any spots are visible on the h.-w. upperside.

Beneath all the colours are much paler. There is a spot in cell, and the wedge-shaped black mark of the upperside may be resolved into a discocellular and a row of discal spots. The dark marginal borders of the upperside are represented only by light brown scales, though the h.-w. border may be somewhat darker than that of the primary. A ♀ example before me has the borders pale brownish grey, divided up by the dark brown ends of nervules, and by the triangular orange-coloured internervular marks, each of which is prolonged at the apex to a dark brown ray. The h.-w. spots are much reduced in both sexes, those in area 7 being most prominent. There are frequently some red internervular marks on the basal portion of the wing.

f. brahmsi.

This form like the others is rather variable in markings. It differs from them in having the orange tawny colour replaced by dull brick red, and in having the dark markings on the upperside of a more decidedly brown tone. The subapical patch, which is small, a very small distal part of cell, the basal half of area 2, and the central part of 1b and 1a are dull brick red. Remainder of wing dark brown. A brown spot near base of 2, and beneath it but rather further from margin a spot in 1b usually connected by a spur with the basal brown. H.-w. dull brick red; slightly blackened at base, and having a dark brown hind-marginal border 2.5 mm. wide as far as 3, where it widens to about 4 mm.

On the underside the basal half of f.-w. is dull red, paler than above. Costa greyish brown. A large black spot in cell, and one in 2 and 1b. The subapical patch is ochreous, and between it and end of cell is an irregular black mark joined on its lower side to a crescentic spot in 3. The apical and hind-marginal border presents a different appearance to that in *acerata* and *vinidia*. There is a series of subtriangular orange ochreous marginal spots, followed inwardly by a band of pale brown. The spots are separated only by the black ends of nervules; each spot is outlined with black and its apex produced into a black ray which bifurcates where it meets the pale subapical spot, or the ground-colour in 2 and 1b.

H.-w. pale ochreous with black spots as in *acerata*. Red internervular marks in basal half in 9, 7, 5, cell, 1c, 1b, and 1a. A broad pale brown hind-marginal border shaped as in *vinidia*, and inclining to tawny at its inner edge. Subtriangular orange ochreous marginal spots, each outlined with black and produced inwardly in a black internervular ray. Nervule ends also black.

I have not seen a ♀ of this form, but judging from those of the other forms it probably does not greatly differ from the ♂.

Suffert's *diavina* has in f.-w. a smaller subapical spot, and larger spots in 2 and 1b. It was taken at Victoria, Cameroon, but similar examples are before me from N. Rhodesia.

Aurivillius (*l. c.*) describes the larva and pupa as follows:—

Larva very like that of *bonasia*, but more marked with red brown above, and with paler and more interrupted longitudinal streaks. Only the spines of segments 1, 2 and 11–13 are black, the remainder being whitish. The head is blackish with a pale anterior bifurcate middle line.

Pupa pale with black markings, the five rows of spots of the abdomen formed of separated subquadrate spots with pale centres, the latter not raised.

Examples of the larva (Pl. VI, f. 13), taken by Mr. W. A. Lamborn near Lagos are pale green with a few brownish dorsal and dorsolateral marks on each segment. Lateral line pale yellowish. On the first and last four segments the spines are black. The remainder are yellowish. An anterior view of the head shows it to be brownish with a black triangular mark in the centre, on each side of which is a thick black line. The food plant at Lagos is *Lepistemon africanum*, Oliv. (*Convolvulaceae*).

Examples of *acerata* taken by Neave in the neighbourhood of L. Bangweolo vary very considerably and may be of the *acerata* or *vinidia* form, the latter predominating whilst there are intermediates to *tenella* and *brahmsi*.

The species has a wide distribution. The *vinidia* form is predominant, true *acerata* appearing rather occasionally. Both occur from Ashanti, through Togoland, Nigeria, Cameroon, French Congo, Angola, Congo State to North Rhodesia. In this region many intermediate forms are found. In Nvassaland, German East Africa and British East Africa, and extending into Abyssinia (Marmasa and Alaballa) the *tenella* f. is predominant and might perhaps be regarded as an eastern subspecies, though it is scarcely sufficiently constant to be thus separated. The local form *brahmsi* is found in Cameroon (Bipindi) and Nigeria (Kabba Town).

92. ACRAEA TERPSICHORE. Pl. XIII, f. 6.

Acraea terpsichore, Linnaeus, (*Pap.*) Syst. Nat., ed. 10, p. 466 (1758); Mus. Ulr., p. 222 (1764); Seba, Locuplet. Rerum. Nat., iv, pl. 27, f. 29, 30 (*cepheus* var.) (1765); Butler, (*A.*) Proc. Zool. Soc., p. 655 (1893); Aurivillius, Rhop. Aeth., p. 104 (1898); Ann. Mus. Genov., p. 11 (504) (1910).

= *serena*, Fabricius, (*Pap.*) Syst. Ent., p. 461 (1775); Herbst, Naturs. Schmett., 5, p. 19, pl. 82, f. 8, 9, ♀ (non ♂) (1792); Godart, (*A.*) Enc. Méth., 9, p. 232, ♀ (non ♂) (1819); Oberthür, Ann. Mus. Genov., 15, pp. 157, 184 (1879); Snellen, Tijdschr. v. Ent., 25, p. 216 (1882); Staudinger, Exot. Schmett., 1, p. 83 (1885); Karsch, Berl. Ent. Zeit., 38, p. 195 (1893); Butler, Proc. Zool. Soc., p. 115 (1896); Neave, Novit. Zool., 11, p. 346 (1904); Proc. Zool. Soc., p. 26 (1910); Grünberg, Sitzb. Ges. nat. Fr., p. 149 (1910).

= *eponina*, Cramer, (*Pap.*) Pap. Exot., 3, p. 138, pl. 268, f. C. D. (non A. B.) (1780).

= *liberia*, Butler, Trans. Ent. Soc., p. 525 (1870).

= *manjaca*, Snellen, Tijdschr. v. Ent., 15, p. 11 (1872).

♀ f. *janisca*, Godart, Enc. Méth., 9, p. 233 (1819).

f. *rougeti*, Guérin, Lefeb. Voy. Abyss., 6, p. 368, pl. 10, f. 6, 7 (1849); Grünberg, Sitzb. Ges. nat. Fr., p. 149 (1910).

= *manjaca*, Wallengren, Rhop. Caffr., p. 22 (1857).

= *serena*, Trimen, Rhop., Afr. Austr., p. 107 (1862); Hoppfer, Peters Reise. Ins., p. 377 (1862); Staudinger, Exot. Schmett., 1, p. 83, pl. 33 (1885).

= *manjaca*, Boisduval, Faun. Madag., p. 33, pl. 4, f. 6, pl. 5, f. 6, 7 (1833); Aurivillius, Voeltzkow Exp., p. 316 (1909).

= *serena*, Mabille, Hist. Nat. Mad. Lep., 1, p. 111, pl. 11, f. 7, 8 (1885-7).

= *buxtoni*, Butler, Ann. Nat. Hist. (4), 16, p. 395 (1875); Trimen, S. Afr. Butt. 1, p. 170 (1887); Proc. Zool. Soc., p. 74 (1891); Fawcett (metam.), Trans. Zool. Soc., p. 295, pl. 46, f. 10, 11, 12 (1901).

= *perrupta*, Butler, Ann. Nat. Hist. (5), 12, p. 102 (1883); Proc. Zool. Soc., p. 400 (1898).

f. *melas*, Oberthür, Etud. d'Ent., 17, p. 24, pl. 1, f. 13 (1893).

f. *subserena*, Gr.-Smith, Novit. Zool., 7, p. 544 (1900); Rhop. Exot. (*Acraea*), 8, p. 28, pl. 8, f. 5, 6 (1901).

[S. LEONE.]

f. venturina, Thureau, Berl. Ent. Zeit., 48, p. 303 (1903); Suffert, Iris, p. 31 (1904).

[UGANDA (Muanza).]

f. connexa, Thureau, Berl. Ent. Zeit., 48, p. 304 (1903).

[NGURUMAN.]

f. intermediana, Strand, Mitt. Zool. Mus. Berl., p. 283, fig. (1911).

[GERMAN E. AFRICA (Mahenge, Mkamba).]

The localities of the named forms are given under each. Generally *A. terpsichore* occurs from about lat. 10°3' N. to 30° S. and in Madagascar and the Islands.

f. ventura, Hewitson, Ent. Mo. Mag., 14, p. 51 (1887); Butler, Proc. Zool. Soc., p. 655 (1893); *l. c.*, p. 565 (1894); Aurivillius, Rhop. Aeth., p. 104 (1898); Neave, Proc. Zool. Soc., p. 26 (1910); Grünberg, Sitzb. Ges. nat. Fr., p. 149 (1910).

= *terpsichore*, var. *bukoba*, Weymer, Iris, p. 225, pl. 2, f. 6 (1903).

CONGO (Lualaba V.); N.E. RHODESIA (Serenje, Abercorn, Broken Hill to Tanganyika, Fwambo); GERMAN E. AFRICA (Mosozzi, Madikia, Langenberg, Bukoba); BRITISH E. AFRICA (L. Baringo), UGANDA (Sesse I.).

f. rangatana, *f. nov.* ? subsp.

= *ventura*, Butler, Proc. Zool. Soc., p. 565 (1894).

BRITISH E. AFRICA (Rangatan, Laitsipia).

A. terpsichore ochrascens, subsp.

= *A. ochrascens*, Em. M. B. Sharpe, Entomologist, p. 40 (1902).

V. NYANZA (Buka Bay).

A. terpsichore is an extraordinarily variable species, especially in the ♀ sex. A careful examination of a long series of specimens, numbering many hundreds of examples, convinces me that nearly all the variations are liable to occur anywhere throughout the wide range of the species. It should however be stated that the *rougeti* form in which the f.-w. subapical patch is not separated from the ground-colour is very characteristic of the more southern part of the species' range, and in fact might be regarded as a southern subspecies. Both the typical and *rougeti* forms however occur together in many localities. The following is a general description of the male:—

A. terpsichore terpsichore.

♂. Expanse 40–50 mm. Ground-colour reddish orange to deep golden yellow. F.-w. black along costa, narrow at base and just before apex, and rather wider between. Apex with a fairly broad black tip (3–5 mm.) becoming narrower along hind margin. This marginal black is wider in areas 2 and 3 than elsewhere. In typical examples it is so extended inwardly that it joins a large wedge-shaped black mark emanating from the costal black at about the end of cell, and thus cuts off a subapical patch of the ground-colour. When this patch is not completely cut off, but is joined to the general ground-colour across area 3, the example may be said to belong to the form *rougeti*. Upon the marginal black is a series of internervular submarginal spots of the ground-colour varying much in size and sometimes disappearing towards the apex. There is usually a spot in the cell, close against the subcostal nervure and above origin of nervule 2. This spot may be a minute dot, an elongated streak, or a rounded mark some 2 mm. in diameter. There is sometimes a very slight black basal suffusion.

H.-w. slightly blackened at base and having a black hind-marginal border from 2 to 3 mm. wide and bearing internervular spots of the ground-colour, these being very variable in size and sometimes reaching the margin. The inner outline of this border may be perfectly regular and parallel to the outer margin, or it may be somewhat angulated, the border being rather wider at apex and anal angle. Black spots corresponding to those on underside but usually only faintly indicated, with the exception of the spot on discocellulars, which is almost always visible as a short black line in the middle of the wing, and forms a very characteristic feature.

Underside f.-w. from base to central portion like upperside but paler, darkest at base and along subcostal. Costa greyish ochreous. The subapical and apical areas may be black as on upperside, though duller, and enclosing the subapical patch, which on the underside is pale ochreous, or the upper distal portion of the wing may be ochre yellow from the discocellular mark to the margin, broken only by the black ends of the nervules. Along the hind margin in 3, 2, 1b, and 1a, either the black or the yellow may predominate. In the former case internervular yellow marks remain, in the latter the black powdering on the nervules may be either straight or may widen a short distance from the margin into arrow-head markings. There is a black dot at base of costa and a narrow black line round hind margin.

H.-w. pale ochreous with black spots and markings. Frequently there are splashes of red on the central area of the wing, and when this is well developed the example may be said to belong to f. *venturina*, Thur. The markings of the hind-marginal border are rather difficult to describe. The end of each nervule is black for a distance of 2 to 3 mm., and there is a narrow black line round the margin. Upon this line stand rather sharply pointed black internervular arches, their central points being produced inwardly as short internervular rays. Each of these rays touches inwardly the middle of a second internervular arch, the secondary arches having their apices pointing towards the margin. The rather complicated pattern so formed is distinctly wider in areas 2 and 3 than elsewhere. In the *venturina* form the internervular rays are red instead of black and may project outwardly into the primary arches. In some cases the secondary arches are flushed with red along their inner edge. The spots are sometimes large and confluent, but more usually small and separate. There is a discal row of nine, but those in 3 and 6 are sometimes absent. The first five (in 7 to 3) form a fairly regular curve nearly parallel to apical margin, the line then curves sharply round towards the inner margin. In addition to these spots there is some irregular black at base, a spot in 8 against precostal, one in 7, two in cell, one on discocellulars, and one in 1c, 1b, and 1a, that in 1b being further from base than the other two.

Head black, with a pale line between the eyes and two reddish tufts on the collar. Thorax and abdomen black above, with reddish yellow lateral spots. Claws unequal.

♀. Expanse 44–60 mm. The ♀ of this species is so excessively variable that it is scarcely possible to describe every form which it may assume. There are before me sixteen examples selected from a very long series. These sixteen examples are all different, and every grade of intermediate may be found. The only constant feature seems to be the spotting of the h.-w. underside and the black linear spot on the h.-w. upperside discocellulars. The forms selected may be thus shortly described:—

- (a) Like the ♂, but with a brownish suffusion at base of wings, and two blackish marks near base of f.-w., 1b.
- (b) Like ♂, but much paler. F.-w. apical black completely enclosing a pale ochreous patch. H.-w. marginal spots all touching the margin, and the black border about 5 mm. wide in 2 and 3.
- (c) Like (b), but very pale dusky ochreous. F.-w. subapical patch white.

- (d) F.-w. ground-colour violet grey. Subapical patch white. H.-w. ochreous grey. Submarginal spots of both wings pale ochreous.
- (e) F.-w. grey, flushed with red at base, subapical patch creamy white. H.-w. ochreous, suffused with red at base. Submarginal spots of both wings orange.
- (f) Like (e), but ground-colour of f.-w. white with a rust red basal flush.
- (g) F.-w. violet grey with a white subapical patch. H.-w. bright ochreous.
- (h) F.-w. violet grey. A faint trace of whitish subapical patch. H.-w. golden yellow with a broad black margin bearing golden yellow spots.
- (i) F.-w. white. Apical patch not enclosed. H.-w. creamy white. Broad black marginal border. Submarginal spots pale ochreous.

In the following there is no wedge-shaped black central mark in f.-w., merely a black spot on the discocellulars, and the marginal black is not widened at 2 and 3 but tapers from apex to hind margin and is much suffused inwardly. There is only a trace of submarginal spots in f.-w.

- (j) F.-w. pale dusky cream colour, h.-w. rather more ochreous.
- (k) F.-w. ground-colour semitransparent sepia with a faint indication of whitish subapical patch. H.-w. dark sepia with a discal powdering of reddish scales.
- (l) F.-w. white with orange basal flush. H.-w. upper half dull orange, lower half dark grey. Marginal border 4 mm. broad. Only a trace of submarginal spots.
- (m) F.-w. white with ochreous flush at base. H.-w. dark cream colour.
- n) F.-w. dull ochreous red, h.-w. rather brighter.
- (o) F.-w. Basal half red, discal part white. Submarginal spots orange. H.-w. reddish yellow.
- (p) F.-w. reddish grey suffused with dull red at base. A curved transverse creamy white band from costa to hind angle. H.-w. dull orange. A faint trace of marginal spots.

To Godart's f. *janisca* may be assigned those forms of the ♀ which are dusky grey. Boisduval's f. *manjaca* occurs in Madagascar. The ♂ may have the f.-w. apical patch completely enclosed or not, and the ♀ is like that described above under (i), but with the f.-w. apical patch

practically enclosed. Madagascar forms seem no more constant than those from other localities. Of two ♀♀ before me one is like Mabilles's figure (pl. 11, *l.c.*), and the other is similarly marked, but the f.-w. is flushed with yellow, and the h.-w. is ochreous.

Thurau's ab. *connexa* has the cell spots of the h.-w. beneath contiguous with those on the discocellulars. The same author's ab. *excentrica* has the spots in 3 and 6 of h.-w. drawn out to meet the black arches of the marginal border, whilst those in 4 and 5 are partially extended in the same manner.

Oberthür's ab. *melas* is a melanic aberration of the ♂. Grose-Smith's *subserena* is not separable from the present species. It is a ♂ in which the h.-w. spots are scarcely visible above, and represented beneath by one spot in 7, 1c, 1b, and 1a, and a basal spot in cell. On the upperside the hind margins of both wings are densely black with a few pale spots on h.-w. margin, and the f.-w. discal black bar is represented only by a spot at end of cell separated from the costa by the ground-colour.

Strand's *intermediana* is a curious form, the type of which has large marginal spots on the black borders of both wings. The subapical black bar is interrupted. The spots of h.-w. underside are as in typical *terpsichore*, but between them is a considerable amount of red scaling. There is also a curious dusting of brown scales on the nervures in the middle of the wing. With the type in the Berlin Museum are three co-types. These show very little of the brown scaling and much less of the red.

The form *ventura* has hitherto been regarded as a distinct species, and the remarkable difference in the pattern of extreme examples would, in the absence of intermediate forms, amply justify such a conclusion. The form may be thus described:—

A. terpsichore f. *ventura*.

♂. Expanse 42–58 mm. Wings deep orange tawny. F.-w. brownish black along costa. Apex black 4–5 mm. wide and a black hind-marginal band 2–3 mm. wide bearing elongated internervular spots of the ground-colour. This marginal border is widened at nervules 3 and 4 where it joins a transverse black bar proceeding from costa just beyond end of cell, thus enclosing a more or less ovate subapical patch of the ground-colour. This patch is not always completely enclosed. A very slight blackish

suffusion at base of wing. Sometimes a spot in 1b near middle. H.-w. slightly blackened at base, and having a black hind-marginal border about 2 mm. wide upon which are ovate spots of the ground-colour which sometimes reach the margin. Just before middle of wing there is an indication of a double curved band of linear spots corresponding to those beneath. A linear spot on discocellulars more distinct than the others.

Underside, f.-w. Basal half orange tawny but paler than above, darkest along subcostal. The subapical patch indicated in ochreous yellow. Costa, apex, and hind margin greyish ochreous. Apical and hind-marginal areas striated by the black ends of nervules and internervular orange streaks. An irregular transverse black mark extending from costa just beyond end of cell partly into area 3. A narrow black marginal line.

H.-w. Pale ochreous, area 9 pinkish. Just before middle of wing a curved double row of linear transverse spots between the nervules enclosing in 7, cell, and 1c a red patch. There is also a spot in 8 against precostal, a basal spot in cell, and in 1c. The marginal border formed as follows:—The ends of nervules are black and there is a narrow black marginal line upon which stands a series of finely black triangles enclosing ochreous triangular spots. The apices of these triangles are produced inwardly into broad red internervular marks. This pattern is much narrower in 4 and 5 than elsewhere, so that the border is at that point deeply invaded by the ground-colour. The inner edge of the border may be clearly defined by a fine black line. Head black with a pale mark between the eyes, two reddish tufts on collar, thorax black with a few pale markings. Abdomen black above with pale ochreous lateral spots and segmental lines.

♀. Expanse 50–60 mm. Resembles the ♂ fairly closely but the ground-colour varies from rather duller to dusky ochreous. The black spot in f.-w. 1b more generally present and often in the form of an irregular streak. H.-w. has the marginal spots larger and the discal spots more distinct. The black nervule ends and the more clearly defined inner edge of the underside marginal pattern are distinctly visible on the upperside.

The underside is very like that of the ♂, but the h.-w. discal black spots are thicker and the inner edge of the marginal pattern is distinctly defined by a black line.

I can find nothing in Weymer's fig. of "*terpsichore* var. *bukoba*" to distinguish it from this form, the only

difference being the absence of the spot on discocellulars in h.-w.

Such an example of the *ventura* form as is described above is really not quite typical, as Hewitson's type is in fact more like an intermediate between *terpsichore* and *ventura*, the red on the h.-w. underside being less developed than in the more extreme forms.

A. terpsichore ochrascens, subsp.

♂. Expanse about 42 mm. Wings pale creamy white. F.-w. with a slight dusky suffusion at base, a dusky powdering along costa, about 1 mm. wide to just beyond end of cell, where it becomes very narrow, finally joining an apical brownish black patch about 4 mm. wide. At area 5 this apical patch becomes suddenly narrower and continues along the hind margin as a border about 2 mm. wide bearing marginal or submarginal spots of the ground-colour. At end of cell a blackish, more or less wedge-shaped mark like that in *terpsichore*.

H.-w. blackish at base with a slight indication of the small discal and basal spots of the underside, those in 7, and on the discocellulars being most distinct. A blackish hind-marginal border about 2 mm. wide bearing large spots of the ground-colour.

Underside, f.-w. Like the upper but no apical and marginal black. The ends of nervules are however distinctly black. Margin with a fine black line.

H.-w. as on upperside but without black basal suffusion. A little irregular black at base and a spot in 8 close to precostal. Across the wing at the level of end of cell a double row of small linear black spots formed by two in 7, one in cell and one on discocellulars, two in 1c, 1b, and 1a. In 7, cell, and 1c these spots enclose reddish marks. Hind-marginal border of a complicated pattern somewhat resembling that in *terpsichore*. The ends of nervules are black, and from the extremity of each arises a pair of internervular streaks. Each of these streaks meets one from the next nervule at a point some distance from margin, and the triangle so formed encloses near its apex a reddish mark. This border is only about half as wide in 4 and 5 as elsewhere, so that in those areas the ground-colour extends outwards in a characteristic manner. Sometimes there is a spot at base of cell.

Head and thorax black, abdomen black above with whitish lateral spots and segmental lines.

♀ resembles the ♂.

This peculiar form is, so far as is at present known, extremely local. The type was described as from Entebbe, but it has not been received by the Oxford Museum, amongst the many thousand specimens from that locality. The habitat given, viz. Buka Bay, V. Nyanza, is the only quite authentic record I possess.

A. terpsichore f. *rangatana*. Pl. V, f. 2 (♂).

♂. Expanse 44 mm. F.-w. Cell, a small elongated spot at base of 3, basal half of 2, greater part of 1b, and central portion of 1a tawny yellow. Costa and apical half of wing sepia. The usual subapical patch of ground-colour is reduced to three elongated pale ochreous streaks in 6, 5, and 4, that in 6 being only about one-third the length of those in 5 and 4. Submarginal internervular spots of tawny yellow. A little black at base extending outwards along nervure 1 and there expanding into a small dusky spot about 5 mm. from base. A small crimson streak on subcostal near its base.

H.-w. with a little black at base, central area tawny yellow, hind margin broadly sepia, deeply indented by ground-colour in areas 4 and 5. A series of submarginal yellow spots inclined to tawny towards apex. Inner margin paler with two dusky spots in 1a and one in 1b, all more or less coalescent. The subbasal band of red edged with black, so conspicuous beneath, is here faintly indicated.

Underside, f.-w. as above, but paler and duller, and the dark apical portion blackened only at end of cell, and along outer edge of the tawny yellow in 3 to 1a. Orange internervular streaks along the margin. H.-w. pale dull ochreous with black nervule ends and bifurcated rays enclosing red marks, the latter inwardly limiting the subtriangular marginal spots of ground-colour. At about the level of end of cell a double row of elongated transverse black spots enclosing red, much as in *ventura*. A round subbasal black spot in cell. A black spot in 8 and some red in 9. Some irregular black at base.

♀. I have not seen a ♀ of this form.

The pattern of the upperside of this form is very distinctive and with the exception of the type and co-type in the South Kensington Museum, I have seen no examples at all like it. The genitalia are the same as in *terpsichore*.

The larva and pupa of *A. terpsichore* are thus described by Trimen :—

"Larva.—Dull green. A whitish stripe along each side of the back, interrupted on each segmental incision by a transverse line darker than the ground-colour. Spines of the dorsal and upper lateral rows black; of the lower lateral row on each side yellow. The two dorsal black spines on segment next head longer and more distinctly branched than the rest, and projecting forward beyond the head, which is ochreous."

The food plant is stated to be a species of *Hermannia*.

"Pupa.—Pale yellowish. Outline of wings and nervures very finely black; some thin and ill-defined dorsothoracic black marks; on each side of abdomen a subdorsal and a lateral row of yellow spots in black rings, the latter being thinner in the lateral than in the subdorsal row. Attached to a slender stalk."

Fawcett's description is as follows:—

"Larva.—Pale buff dorsally, deepening to pale green on the sides with a buff lateral spinacular line above thoracic legs and claspers, which are also buff. Two dorsal pale green stripes, interrupted on every segment by a pale yellow transverse stripe bearing four black branched spines; below these are two buff coloured spines springing from the buff spiracular line. Head yellowish. Feeds on a sp. of nettle locally called 'pink hibiscus' (although it is not a *hibiscus* at all). It is a common plant on the Berea, Durban, where I found the larva, and has been identified for me by Mr. Medley Wood as *Triumfetta rhomboidea*, Jacq.

"Pupa waxy white with the usual fine black lines and spots with orange centres, beautifully gilded; pupae formed in the dark, however, inside a box, are slaty black."

It is only after careful examination of many hundreds of examples that I have arrived at the conclusion that *ventura* is only a form of *terpsichore*. As stated, there is a great difference between extreme examples of the two forms, but latterly I have had the opportunity of inspecting so many intermediates, that I find it impossible to define the point at which *terpsichore* ends and *ventura* begins. A series of preparations of the genitalia shows a range of individual variation which entirely confirms the view that there exists at present no dividing line. The condition of the species is such as to make it conceivable that *ventura* may be syngamic with *terpsichore* in some localities and not in others, though breeding experiments

are necessary before we can be certain of the actual relations obtaining between the forms.*

As regards the *rougeti* form in which the subapical patch of ground-colour is not isolated from that of the remainder of the wing, this form is certainly characteristic of the South and East, though the feature is scarcely, in my opinion, sufficiently constant to warrant the separation of *rougeti* as a subspecies.

GROUP XV.

93. *ACRAEA OBERTHÜRI*. Pl. XIII, f. 17.

Acraea oberthüri, Butler, Ann. Nat. Hist., 6, 16, p. 231 (1895);

Aurivillius, Rhop. Aeth., p. 107 (1898); Eltringham, Af.

Mim. Butt., p. 82, pl. 8, f. 14 (1910).

= *bonasia*, Staudinger, Exot. Schmett, 1, p. 84 (1885) (non Fabr.).

= *cynthius*, Oberthür, Etud. d'Ent., 17, p. 27, pl. 1, f. 5 (1893).

OLD CALABAR; NIGERIA (Lagos); CAMEROON; F. PO; GABOON (Abanza); CONGO (Bangala, Ft. Beni to Ituri R.).

f. *confluens*, Suffert, Iris, p. 23 (1904).

CAMEROON; NIGERIA (Lagos).

A. oberthüri oberthüri. Pl. VI, f. 14 (larva).

♂. Expanse 42–58 mm. F.-w. dark umber brown. Base of subcostal nervure usually reddish. An oblique subapical patch of ochreous varying to orange ochreous in 10, 9, 6, 5, and 4. An inner marginal patch of the same colour 3 to 4 mm. wide, its inner edge running from just before middle of area 1a to a point on median midway between origin of 2 and 3. In areas 1b and 2 this edge is concave, being slightly invaded

* Since the above was written I have had the advantage of discussing the point with my friend Mr. S. A. Neave, whose extensive experience in the field is of the utmost value in cases of this kind. He considers the form which has a very complete central red band on the underside of h.-w. to be a distinct species. Should this ultimately prove to be the case it seems probable that a new name will have to be given to it, as Hewitson's type of *ventura* is apparently only an unusually red *terpsichore* and is scarcely of the pronounced red type of specimens which were captured by Mr. Neave, and on which his opinion is based. We may hope to succeed in breeding these forms at no distant date. Meanwhile we can do no more than recognise their very close affinity.

by the ground-colour. The outer edge of the patch runs from near the hind angle in 1a to the middle of nervule 3, and is slightly convex between the nervules. The apical and hind-marginal border shows distinct traces of the striated pattern of the underside.

H.-w. Base occupied by a brownish grey triangular patch, its outer edge reaching nearly to end of cell. On this patch are black spots corresponding to those on underside. Central area of wing with a curved pale band varying in colour from ochreous to orange. This band is continuous at the costa with the f.-w. inner marginal patch and of about the same width, and terminates on the inner margin where it is rather narrower. Beyond this central band is a broad hind-marginal border the inner edge of which is a perfectly regular curve and not angulated as in some of the rather similar species. This marginal border is sepia grey with elongated inwardly tapering brown internervular streaks each of which is bifurcated at the margin by a sepia grey triangular mark.

Underside. F.-w. from base to apical patch, along costa, middle of cell, and middle of area 1b, the dark colour corresponding to that of the upperside is invaded by an irregular radiating suffusion of dull ochreous, usually leaving a dark spot just beyond middle of cell, and sometimes a second smaller spot in 1b close to median. The light patches are as on upperside but paler, often with a tendency to coalesce in area 3. The apical and hind-marginal border is ochreous, striated by the black nervule ends and black internervular bifurcated rays, the latter meeting inwardly except in 3, 2, 1b, and 1a, where they coalesce with a blackish submarginal suffusion. A fine black line round hind margin.

H.-w. Base, over an area corresponding to the dark area of the upperside, pale greenish ochreous, spotted with black as follows:—One in 9, and one in 8, two in 7 about 3-4 mm. apart, one at base of 6, one at base of 5 coalescing with a double discocellular spot and a terminal spot in cell. Two in cell, one at base of 2, a basal spot in 1c, followed by two spots which are sometimes confluent and sometimes separated, in the latter case enclosing a faintly reddish mark. Beneath these, two in 1b and in 1a. Central band as above but paler. Marginal border of the colour of the central band, heavily striated by black nervule ends between which are internervular inwardly tapering rays, each of which is bifurcated at margin by a whitish triangular mark. A fine black line round hind margin.

Head black with pale marks between and behind eyes, thorax black with a few paler scales, abdomen black above with pale ochreous segmental lines and lateral spots. Claws unequal.

♀. Expanse 50-68 mm. Resembles ♂ but paler and duller, the ground-colour being sometimes brownish grey. The paler areas though varying in depth of tint do not appear ever to attain the orange colour seen in some ♂♂. The h.-w. marginal border often broader than in ♂, and always showing much more distinct traces of the underside pattern. Underside correspondingly paler, and the h.-w. central band with a faint pinkish tinge.

A. oberthüri f. *confluens*, Suff.

In this form the apical and inner marginal patches are confluent in area 3 on both surfaces. Suffert's examples were from Cameroon. Similar forms of both sexes are before me, from Kiva Iho R., Nigeria, and from Lagos. One of these (♂) was taken near Lagos by Mr. Lamborn. Besides having the paler areas (which are orange colour) confluent in the f.-w. the colour of the central band of h.-w. radiates along the nervules into the marginal border. Another example (♀) occurs in a series bred by the same collector from a company of larvae, the other specimens being normal though the paler areas show a varying depth of tint.

The larvae near Lagos are as follows:—

Slaty blue with a reddish yellow head, and traces of a paler lateral line on segments 10-13. The spines on segments 2-5 and the dorsal and lateral spines on 10-13 are black. The dorsal and lateral spines on 6-9 are yellowish and the sublaterals are yellowish, those on 6 and 10-13 tipped with black. Each black spine arises from a dark tubercle, and there appear to be a few irregular darker dorsal and lateral segmental markings not accurately discernible in a preserved specimen.

The food plant is *Ancistrocarpus densispinosus* (*Tiliaceae*).

The pupa is of the usual *Acraeinae* appearance, white, with two dorsal and two lateral rows of black-ringed orange spots, and black lines on the wing-covers. Each of the dorsal black rings has a small blunt process on the side nearest the median dorsal line, and the whole pupa is covered with microscopic spines.

94. *ACRAEA ALTHOFFI*. Pl. XIV, f. 1.

Acraea althoffi, Dewitz, Ent. Nachr., 15, p. 102, pl. 1, f. 5 (1889); Aurivillius, Rhop. Aeth., p. 107 (1898); Grose-Smith, Novit. Zool., 7, p. 544 (1900); Smith and Kirby, Rhop.

Exot. (*Acraea*), p. 28, pl. 8, f. 3, 4 (1901); Neave, Novit. Zool., 11, p. 346 (1904); Eltringham, Af. Mim. Butt., p. 81 (1910); Grünberg, Sitzb. Ges. naturf. Fr., p. 150 (1910).
CONGO (Mukenge); UGANDA (Entebbe, Pt. Alice, Sesse I.).

f. *rubrofasciata*, Aurivillius, Ent. Tidskr., 16, p. 111 (1895);
Rhop. Aeth., p. 107 (1898).
CONGO (Bangala, Nyam Nyam); CAMEROON (Bitjé).

♀ f. *telloides*, f. nov.

Eltringham (*althoffi*, ♀, f. 3), Af. Mim. Butt., p. 82, pl. 8,
f. 12 (1910).

ENTEBBE.

♀ f. *drucei*, f. nov.

Eltringham (*althoffi*, ♀ form 1), l. c. p. 82 (1910).

ENTEBBE.

♀ f. *ochreatea*, f. nov.

ENTEBBE.

A. althoffi pseudopaea, subsp. nov.

= *A. pseudopaea*, Dudgeon, Proc. Ent. Soc., p. liii (1909).

E. and W. ASHANTI; S. NIGERIA (Ila).

A. althoffi althoffi.

♂. Expanse 60-64 mm. F.-w. sepia black. From base along lower half of cell a scarlet streak which becomes gradually wider till it reaches a point about 2 mm. before end of cell when it becomes suddenly wider extending across cell to subcostal. Beyond end of cell a subapical scarlet patch consisting of three rectangular spots separated by nervules 5 and 6, the lowest spot being somewhat produced along the upperside of nervule 4. Beneath this in 3 and somewhat more distally placed a fourth subquadrate spot, yellow, powdered with scarlet. An inner marginal patch of scarlet in 2, 1b and 1a, the outer edge slightly convex between the nervules, the inner edge deeply on 2, and slightly between 2 and 1, indented by the ground-colour. On the hind margin a faint trace of the pattern of the underside. H.-w. with a sepia black triangular basal patch with indications of the black spots of the underside. A central band of pale lemon ochreous about 2 to 3 mm. wide (white in some examples) beginning just beyond middle of costa, bending inwards at 6 and thence traversing the wing nearly straight to the middle of the inner margin. Remainder of wing sepia black with indications of the underside pattern.

Underside. F.-w. Costa pale brown with a whitish speck and a small black streak at base. Cell pale dull scarlet, a rounded black spot near middle close to subcostal followed by a more or less V-shaped spot, its apex towards base. The subapical spots are cream colour dusted proximally with reddish yellow and the space between them and the cell is blackish. The apex and hind margin is brownish ochreous, striated by black nervule ends and black internervular rays, each of the latter being swollen out just before margin and enclosing a whitish streak. The base of 2, 1b and 1a is brownish ochreous, the central portion pale dull scarlet and there is a black spot between the brown and the red in 2 and 1b, and a second, subbasal spot in the latter area close against the median. The outer edge of the reddish portion is separated from the marginal border by a blackish suffusion.

H.-w. base greenish grey with black spots, of which there are one in 9 and 8, two in 7 about 3 mm. apart enclosing a brownish mark, one near base of area 6, one at base of 5 more or less confluent with a discocellular spot, and sometimes with a terminal spot in cell, though this may be absent. Two spots in cell, the outermost followed by a brownish mark, a dot at extreme base of 2. A basal and two other spots in 1c, the latter enclosing a brownish mark, two spots in 1b and 1a and some black at bases of nervures. Central band as above but paler. Marginal half of wing brownish ochreous striated by the black nervules and by internervular black rays, each of which is bifurcated a short distance from margin, and encloses a whitish somewhat shuttle-shaped streak.

Head black with a few whitish dots, thorax black, abdomen black above with yellowish segmental lines and lateral spots. Claws unequal.

♀. Expanse about 67 mm. F.-w. greyish black. The paler markings in f.-w. shaped as in male but white instead of scarlet and yellow, the streak in cell not reaching to base. Indications of black spots more readily seen on underside, in cell, 2, and 1a, as in ♂. H.-w. base with a slight blackish suffusion the edge of which is not well defined as in ♂. Some black basal spots corresponding to those on underside. A central white band, double the width of that in ♂, remainder of wing greyish black with some indication of the striation of the underside.

Underside f.-w. like the upperside but slightly brownish at base, the black V-shaped spot at end of cell very broad and the spot at base of 2 and those in 1b much larger than in ♂. Apex and marginal border pale grey striated as in ♂. H.-w.,

base greyish inclining to brown in 9, 8 and 1c. The black spots rather variable with a tendency to reduction in size and number. Central area greyish white, border pale grey striated as in ♂. Abdomen black above with white lateral spots.

A. althoffi f. *rubrofasciata*.

This form occurs in both sexes and is distinguished by having the central band of the upperside of the h.-w. much broader. This band and also all the paler marks on f.-w. are red. On the underside of h.-w. the basal and central areas are ochre yellow and not differentiated. The white submarginal streaks are visible on the apex of f.-w.

A. althoffi ♀ f. *telloides*.

Just as the typical form of *althoffi* ♀ appears to be modified in the direction of the black and white ♀♀ of *jodutta*, so this form seems to be a development in the direction of the pattern of *Planema tellus*.

In the f.-w. the whole basal half of the wing is dull orange ochreous, though the black spots in cell, 2, and 1b remain, that near end of cell usually confluent with the subapical patch. The spots of the latter are all confluent, forming an approach to the continuous patch in *Pl. tellus*. The h.-w. has very little black at base, but the basal black spots are fairly distinct. The whole of the rest of the h.-w. is dull orange ochreous, the margin slightly powdered with black, the nervule ends black, and the usual characteristic internervular striations, though these differ in that the bifurcations of the internervular rays are open and nearly at their widest on the margin. On the underside the pattern is the same as on the upper, and in fresh examples the ground-colour is quite as dark on the upperside.*

A. althoffi ♀ f. *ochreata*, f. nov.

Differs from other forms in having all the light areas pale dull ochreous, the same colour as in the ♂ *A. jodutta*.

A. althoffi ♀ f. *drucei*.

There is in Mr. Druce's collection a large ♀ which has much the same colouring as the ♂. The f.-w. is of a rather dull brown. There is an orange red streak in the cell, and the subapical spots are pale yellow, the upper ones being tinged with red. The spots in 2, 1b, and 1a are orange red. The h.-w. has a central white band and whitish submarginal spots.

* Unfortunately my figure of this form in Af. Mim. Butt. shows the h.-w. hind-marginal black too heavy and distinct, the margin being usually merely dusted with black.

A. althoffi pseudopaea, subsp.

♂. Expanse about 65 mm. F.-w. rich black brown. An inner marginal patch of tawny orange occupying the central third of areas 1a and 1b, and not quite covering base of 2. Subapical patch small and of the same colour, consisting of three spots in areas 6, 5, and 4, the last having its outer half suddenly narrowed and extending distally, so that the entire spot is twice as long as those above it. Beneath the narrow portion of this spot is a fourth spot of the same colour in area 3 not quite reaching nervule 3.

H.-w. with a triangular black brown patch at base. Remainder of wing tawny orange rather darker on the distal third of wing, which is striated with rich black brown on and between the nervules, the striations and typically bifurcated rays becoming coalescent at margin into a border about 2 mm. wide.

Underside. F.-w. basal two-thirds of cell dull orange brown with a large rounded spot. End of cell black. The subapical spots much paler than above. A black spot at base of 2, and a basal and a subbasal in 1b. Apical and hind-marginal areas dusky ochreous with the usual fusiform spots on margin. H.-w. dusky orange ochreous with paler central band and the typical striations and bifurcated rays. Black spots at base, one in 9, one in 8, two in 7, two in cell, one small spot at base of 5, basal and two subbasal spots in 1c, two subbasal spots in 1b, and one in 1a.

A second example is rather smaller and has the dark areas more velvety and of rather greater extent.

♀. Expanse 75 mm. Like the ♂, but the tawny areas are paler, especially the f.-w. subapical spots. H.-w. with only narrowly blackened rays and nervules and a little dusting of black on margin.

There is no doubt whatever that this interesting form is specifically identical with *althoffi*. In the type specimen the claspers happen to be protruded, and they are quite as in typical examples. I have to thank Mr. N. M. Dudgeon for having taken a great deal of trouble to make arrangements for me to see the type, in the absence abroad of his brother, Mr. G. C. Dudgeon.

Compared with the other species received from Entebbe, *althoffi* may be said to be comparatively rare. For some reason not at present evident it is most difficult to obtain an example in good condition, the ♀♀ especially being almost invariably damaged or worn.

The species can be recognised quite easily in spite of its variability by the peculiar bifurcated formation of the internervular rays especially on the h.-w., each with its enclosed streak. The general pattern also is not like that of any other species of the genus.

The type was received from Mukenge in the southern central part of the Congo State, and has the yellow h.-w. band rather narrower than in the Uganda specimens. The f. *rubrofasciata* has been received from Bangala in the Upper Congo and Nyam Nyam, and also from Bitjé in the Cameroons. Of the subspecies *pseudepaea* I have seen only the two ♂♂ and one ♀, in Mr. Dudgeon's collection.

Our knowledge of this peculiar species has increased greatly in recent years. It is chiefly remarkable for the number of its polymorphic forms which for the most part exhibit mimetic patterns. We have the typical ♂ and also the *rubrofasciata* and *pseudepaea* forms. Of the ♀♀ one is black and white resembling ♀ examples of *jodutta*, one more or less like its own ♂, one of the *rubrofasciata* form, one resembling the ♂ *jodutta*, and one resembling *Pl. tellus*. Both sexes of the *pseudepaea* form resemble *Pl. epaea*.

GROUP XVI.

95. *ACRAEA PHARSALUS*. Pl. XIV, f. 8.

Acraea pharsalus, Ward, Ent. Mo. Mag., 8, p. 81 (1871); Af. Lep., p. 8, pl. 6, f. 7, 8 (1873); Dewitz, Nov. Act. Nat. Cur., 41, 2, No. 2, p. 5 (177) (1879); Mabille, Nat. Hist. Mad. Lep., 1, p. 100, pl. 12, f. 3, 4 (1885-7); Karsch, Berl. Ent. Zeit., 38, p. 195 (1893); Aurivillius (metam.), Ent. Tidskr., 14, p. 275, pl. 4, f. 1a, 1b, 1c, 1d (1893); Rhóp. Aeth., p. 110 (1898); Lathy, Trans. Ent. Soc., p. 186 (1903); Neave, Novit. Zool., 11, p. 346 (1904); Strand, Wien. Ent. Zeit., 29, 1, p. 29 (1910); Aurivillius, Ann. Mus. Gen., p. 19 (512), 25 (518), (1910); Grünberg, Sitzb. Ges. Nat. Fr., p. 150 (1910).

SENEGAL; S. LEONE; LAGOS; GOLD COAST; ASHANTI; IVORY COAST; NIGERIA; CAMEROON; FERNANDO Po; PRINCE'S I.; ANGOLA; CONGO (Ituri Forest; Katanga); NYASSALAND; GERMAN E. AFRICA; BRITISH E. AFRICA; UGANDA.

f. *pharsaloides*, Holland, Entomologist, Suppl., p. 89 (1892); Proc. U.S. Nat. Mus., p. 232, pl. 7, f. 3 (1895); p. 747

(1896) ; Rogers. Trans. Ent. Soc., p. 525 (1908) ; Aurivillius, Sjöstedt's Exp. p. 4 (1910).

= *saluspha*, Suffert, Iris, p. 34 (1904).

ANGOLA ; GERMAN E. AFRICA ; BRITISH E. AFRICA.

f. *pallidepicta*, Strand, Int. Ent. Zeit. Guben., 41, p. 220 (1911).

GERMAN E. AFRICA (Amani).

f. *nia*, Strand, l. c. (1911).

GERMAN E. AFRICA (Amani).

A. pharsalus vuilloti, subsp.

= *A. vuilloti*, Mabille, Ann. Ent. Fr. (6), 8 Bull., p. 170 (1888) ; Mab. and Vuillot, Novit. Lep., 2, p. 10, pl. 2, f. 1 (1890) ; Aurivillius, Rhop. Aeth., p. 110 (1898).

GERMAN E. AFRICA (Ukami, Usagara, Kikoka Stn., Bagamoyo).

A. pharsalus rhodina, subsp.

Rothschild, Novit. Zool., 9, p. 595 (1902).

ABYSSINIA (Up. Gelo R., Bonga, Scheko, Anderatscha, Gamitscha, Banka Omo).

A. pharsalus pharsalus. Pl. VI, f. 7 (larva).

♂. Expanse 60-72 mm. F.-w. base, costa, apical area, hind margin and the greater part of area 1a, dark sepia. Discal half of cell, base of 6, 5, 4, 3, 2, and central half of 1b bright red. A few red scales towards distal end of area 1a. Black spots as follows :—In cell a small spot not far from base, followed by a larger spot beyond origin of 2. A large spot the whole width of cell on discocellulars. Beyond cell an oblique band of three contiguous quadrate spots in 6, 5, and 4 followed by a rounded spot in 3 just under the spot in 4. A large spot at base of 2, usually touching median and nervule 2, beneath it but nearer margin a spot in 1b, and another in the same area close to median just before origin of 2. At the outer edge of the oblique discal band of spots three pale spots varying from white to reddish orange.

H.-w. base suffused with dark sepia extending slightly beyond middle of cell, hind margin brownish black, about 2 mm. wide, its inner edge not very sharply defined, and interrupted by the black nervule ends, and short reddish brown, rather indistinct internervular rays. Central area of wing bright red. Numerous black spots corresponding with those on underside.

Underside f.-w. Those areas which are dark sepia above are here ochreous grey. The black spots are as on upperside, the red areas are dusky pink, and the apical and hind-marginal
TRANS. ENT. SOC. LOND. 1912.—PART I. (JULY) S

portions are striated by the black nervule ends and internervular rays. There is a whitish dot and a small black spot at base of costa, and there are white marks beyond the black discal spots as on the upperside. A fine black marginal line.

H.-w. Base and hind margin greenish grey, central area pale pink. On the hind margin the nervule ends are black, and there is a fine black marginal line. Between the nervules are large dark brown triangular marks (double in 1c) the bases of which do not rest quite on the margin, but leave a very narrow submarginal line of greenish-grey (this line is obliterated in some specimens). Black spots as follows:—One in 8 against pre-costal, two in 7, the outermost just beyond origin of 6 and 7. Beneath this, but much nearer margin a well-rounded spot in 6 and beneath it one in 5. A spot in 4, nearer base than that in 5, and immediately beneath it a spot in 3. In 2 a spot at the level of end of cell, followed by a spot in 1c and 1b, all three in a straight line at right angles to inner margin. Two spots in cell, the second just beyond middle, two on the discocellulars, a basal and a subbasal in 1c, below the latter a spot in 1b, and a basal, a subbasal, and a distal spot in 1a. Some irregular black at bases of nervules.

Head black with a white spot between the eyes, thorax black with a few whitish spots. Base of abdomen black above with orange ochreous lateral spots, remainder orange ochreous. Claws unequal.

♀. Expanse 70-80 mm. Like the ♂ but the red areas much duller, and in f.-w. of less extent. In h.-w. the internervular rays are longer and darker.

The above descriptions apply to typical examples of this species. The Oxford Museum has lately received large companies of *A. pharsalus* bred by Mr. W. A. Lamborn, near Lagos, and these show a fairly wide range of variation. Amongst them the following forms may be observed:—

(a) ♂. Expanse 56 mm. F.-w. rose pink, inclining to whitish beyond cell. Costa and basal suffusion brownish, apex and hind margin sooty black. Pale spots beyond the discal black, white to pinkish. H.-w. rose pink with a sooty black basal suffusion and marginal border. H.-w. underside bluish grey at base. Marginal internervular triangular marks sooty black and contiguous at margin.

♀. F.-w. sepia grey, whitish between the black spots in

central area. Subbasal spot in 1b, usually wanting. H.-w. varying from dark sepia to dusky pink. These specimens are all in one brood, but two of the ♂♂ are normal.

(b) One ♂ specimen with the f.-w. pale discal spots, outer portions of 4, 2, and 1b, and the lower half of the h.-w. pale ochreous. Markings otherwise normal.

(c) Several ♂♂ with f.-w. red reduced to a few indistinct marks, dark areas almost black, central part of h.-w. crimson.

(d) Several ♀♀ with the basal half of f.-w. and the whole of h.-w. suffused with pink. No basal black in f.-w., and that in h.-w. much reduced in depth of colour.

(e) Several ♀♀ with the entire ground-colour of both wings sepia grey. No basal suffusion in either wing.

A. pharsalus f. *pharsaloides*.

Though characteristic of the more Eastern localities, and apparently quite replacing the type in German E. Africa, this form is scarcely constant enough to be regarded as a subspecies. It is distinguished by the much-reduced dark basal suffusion in both wings, and by the fact that the red colour extends in the f.-w. considerably beyond the discal black spots, especially in area 4, leaving only a comparatively narrow dark brown apical patch. The ♀ is much paler, the lighter markings inclining to whitish in the f.-w.

Prof. Aurivillius points out (Sjöstedt's Exp., p. 5, 1910) that the form which Suffert described as *saluspha* is really the typical form of *pharsaloides*. What Suffert regarded as typical *pharsaloides* was a variety of that form.

A. pharsalus f. *pallidepicta*, Strand.

Of the three ♀ examples in the Berlin Museum (all labelled *type*) two have the f.-w. subapical spots whitish. There are no other white markings and the internervular rays on underside are broad and triangular. Another example is whitish in f.-w. cell at base of 2, the costa of h.-w. being greyish.

A. pharsalus f. *nia*, Strand.

This form is more intermediate to *vuilloti*. The whole ground-colour is tawny orange. The spots are not more developed than in ordinary *pharsaloides*. There is a suggestion of a yellowish suffusion beyond spot in f.-w. 2, and at base of 1b. Also a little yellowish in h.-w. in 1c and 2. The triangular rays on h.-w. underside are somewhat reduced. (1 ♂, Amani, Berlin Mus.)

A. pharsalus vuilloti, subsp. Pl. I, f. 11 (♂).

♂. Expanse about 56 mm. F.-w. black. An irregular red

mark across cell at origin of 2, narrow at subcostal and wide at median. Beneath this in 1b a subtriangular red mark, the apex of which just touches the lower outer corner of the red in cell. In the middle of this red mark a black dot. A second transverse red mark in cell about 2 mm. wide, its outer edge reaching median at origin of 3 and there becoming continuous with an elongated quadrate red patch in area 2, which, occupying the whole width of that area, begins just before origin of 3 and ends 3 mm. from margin. Beneath this patch and of about half its length, a quadrate red mark in 1b, its outer edge about 2 mm. from margin, and beneath this a slightly longer red mark in 1a reaching to the margin. Remainder of area 1a grey. On or just beyond end of cell, three very small internervular red spots which form a small transverse streak, and beyond this a subapical bar of red, 2.5 mm. wide, outwardly deeply concave, beginning just above nervule 6 and ending at nervule 3.

H.-w. rather pale sepia grey with a red patch occupying outer half of cell, basal half of 6, 5, 4, and upper basal half of 3. A white patch occupying middle third of 1b, 1c, basal half of 2, and lower basal half of 3. Black spots as follows:—Two in 7, two contiguous spots about middle of 6 and 5, and two ditto at base of 4 and of 3. Two in cell before the middle, and two on discocellulars. One at base of 2, a basal, a subbasal, and a central spot in 1c, two near middle of 1b, and a basal and a subbasal in 1a.

Head black with a whitish dot between the eyes, thorax black with pale marks, abdomen black above with deep yellow lateral spots.

Underside, as above but much duller and pattern less defined. Apical and marginal border powdered with pale sage green and having a fine black marginal line. H.-w. base greenish grey, central area whitish with a pale pinkish flush at end of cell, 6, 5, and 4. Margin greenish grey with a fine black marginal line, the nervule ends black and the internervular rays heavily powdered with black but scarcely exhibiting the characteristic triangular appearance of those in *pharsalus*.

The ♀ resembles the ♂.

Of this form there are 2 ♂♂ and 2 ♀♀ in the Staudinger collection. One ♀ is from Usagara, the three remaining examples being from Ukami Mt. From the latter locality there are also examples of *pharsalus*, and these tend some-

what to the *pharsaloides* form, but all have the internervular rays of the h.-w. linear and not triangular, and they are narrower in *pharsalus* than in *vuilloti*. One ♀ is an intermediate, and there can I think be no doubt that Aurivillius is correct in his suggestion that *vuilloti* is a form of *pharsalus*.

The type of *vuilloti* was taken at Kikoka Station, Bagamoyo, German E. Africa.

The larva of *pharsalus* from Kitta, Cameroon, is described by Aurivillius as follows:—

Reddish yellow above, paler below; a narrow dorsal line, small streaks at fore and hind parts of each segment, and at the spiracles, black. The spines are not longer than the diameter of the body and are finely branched. The upper branches are black and the lower whitish.

The pupa is also figured, and is shown as white with only very faint black lines on the wing cases, etc. It is smooth, and has two dorsal, two lateral, and a vertical row of black marks, most of which appear to be in the form of double streaks with a dot between.

The above description agrees with the larvae sent home by Mr. Lamborn (Pl. VI, f. 7), except that the ground-colour does not appear to be reddish above. I may add that the head is black with a rather conspicuous central, vertically bifurcated white line.

Mabille records the species from Madagascar, but it seems almost certain that this is an error.

GROUP XVII.

96. *ACRAEA PERENNA*. Pl. XV, f. 4.

Acræa perenna, Doubleday, Hew. and Westw., Gen. Di. Lep., pl. 19, f. 4 (1848); Butler, Proc. Zool. Soc., p. 66 (1888); Aurivillius, Rhop. Aeth., p. 93 (1898); Neave, Novit. Zool., 11, p. 346 (1904); Strand, Wien. Ent. Zeit., (29) 1, p. 29 (1910); Neave, Proc. Zool. Soc., p. 14 (1910); Grünberg, Sitzb. Ges. nat. Fr., p. 149 (1910).

= *polydectes*, Ward, Ent. Mo. Mag., 8, p. 81 (1871); Af. Lep., p. 8, pl. 6, f. 5, 6 (1873).

S. LEONE; LAGOS; ASHANTI; CAMEROON; TOGO; ANGOLA; CONGO (Kassai, Quango, Mukenge, Ubangi, Lufupa R., Aruwimi R.); UGANDA (Semliki R., Entebbe, Kampala, Pt Alice, Toro,

Unyoro); BRITISH E. AFRICA (Nandi, Nairobi); GERMAN E. AFRICA (Bukoba, Ukerewe I.).

A. perenna thesprio, subsp.

Oberthür, Etud. d'Ent., 17, p. 21, pl. 3, f. 34 (1893); Aurivillius, Rhop. Aeth., p. 93 (1898); Sjöstedt's Exp., p. 3 (1910).

KATANGA; NYASSALAND; GERMAN E. AFRICA; BRITISH E. AFRICA.

A. perenna kaffana, subsp.

Rothschild, Novit. Zool., 9, p. 595.

ABYSSINIA (Dalba, Uma R., Anderatscha).

A. perenna perenna. Pl. VI, f. 6 (larva).

♂. Expanse 30–74 mm. F.-w. sepia black rather more thinly scaled in median and subapical area. Hind margin markedly concave. An obsolescent dark spot in cell above origin of 2. A double spot on end of cell, and just beyond this an oblique discal band of four spots in 6, 5, 4, and 3. A large spot in 2 touching median and nervule 2. Below this in 1b a suberescence spot. A black longitudinal streak in area 1b from base extending about half the length of this area. A red patch in 1a, 1b, and 2 extending from near hind angle nearly to nervule 3, widest in 1b. A faint reddish mark at discal end of cell. Two small submarginal red spots in area 1b. H.-w. bright red with sepia black basal suffusion extending nearly to end of cell. A black hind-marginal border about 2 mm. wide, having a sinuous inner outline and bearing seven internervular spots, that in 1c doubled. Black discal and basal spots as on underside.

Underside f.-w. Cell and base of 1b almost devoid of scales. Black spots as on upperside. Space between end of cell and discal spots, and for some distance beyond latter, whitish. Costa powdered with brownish scales. Apex and hind margin rusty brown with black nervules and rays. Red patches as on upperside but paler and duller. A small black basal spot on costa.

H.-w. pink, reddish at base, the cell and basal half of area 7 greenish grey. Marginal band dark brown with orange ochreous spots. Black basal and discal spots as follows:—A discal row of seven in 7, 6, 5, 4, 2, 1c and 1b (no spot in 3) a spot on the middle discocellular, a small spot in 8 near precostal, a subbasal spot in 7, one subbasal and one median in cell, and one in 1c, 1b, and 1a. These spots vary in size and may be small and well separated, or large and confluent. Head black, thorax black with a few pale spots. Basal half of abdomen black with orange ochreous spots, remainder orange ochreous. Claws equal.

♀. Expanse 70 to 80 mm. Differs but little from the ♂. Wings slightly rounder. The sepia black areas somewhat paler and the h.-w. margin rather broader.

A. perenna thesprio, subsp.

In this form the red colour extends over nearly the whole of the f.-w. leaving only the costa, apex, and hind margin sepia black. Oberthür states that he has three ♂♂ of this form from Zanzibar, and there is one in the Hope Department from Mombasa. Aurivillius gives Nyassaland as another locality. It appears to be the Eastern subspecies of *perenna*. Examples from Nairobi in the Harrison collection are however of the typical form.

A. perenna kaffana, subsp.

This Abyssinian subspecies resembles the *thesprio* form but differs in the larger size of the f.-w. discal spots, and in having a more extended black basal area, and broader marginal band in the h.-w.

The larva of *A. perenna perenna* (Pl. VI, f. 6) is black with long dorsal spines. There is an ochreous dot on each segment just behind the origin of the lateral spine. Beneath this a few irregular vertical yellowish marks and below the sublateral spines are longitudinal yellowish marks. The segments bearing the true legs have some additional transverse dorsal yellowish marks. The branched spines and the head are black. (Described from an example received from Mr. W. A. Lamborn, taken near Lagos.)

A. perenna bears outwardly a close resemblance to *A. egina*, but can always be distinguished by the marked concavity of the f.-w. hind margin.

97. *ACRAEA ORINA*.* Pl. XV, f. 3.

Acraea orina, Hewitson, Ent. Mo. Mag., 11, p. 130, (1874); Exot. Butt. (*Acraea*), pl. 7, f. 43, 48 (1875).

♀ = *oreta*, Hewitson, Ent. Mo. Mag., 11, p. 131 (1874); Exot. Butt. (*Acraea*), pl. 7, f. 42 (1875); Aurivillius, Rhop. Aeth. p. 113 (1898).

ASHANTI; GOLD COAST; S. LEONE; FERNANDO PO; GABOON; CONGO (to the Ituri R.)

* Aurivillius (*l. c. sup.*) suggests that Hewitson's *A. derbela* is an aberration of *orina*. The type is in the British Museum, and is merely a melanic aberration the identity of which there is some difficulty in deciding. Except as a curiosity it is of little importance.

f. nigroapicalis, Aurivillius, Ent. Tidskr., 14, p. 275 (1893).

CAMEROON ; UGANDA (Entebbe).

f. orinata, Oberthür (*A. orinata*), Etud. d'Ent., 17, p. 22, pl. 2, f. 22 (1893).

CONGO (Ubangi).

A. orina orineta, subsp. nov.

♀ = *orinata* ♀, Butler, Proc. Zool. Soc., p. 44, pl. 1, f. 1 (1902).

BRITISH E. AFRICA (Kampala, Entebbe).

A. orina orina.

♂. Expanse about 54 mm. F.-w. dark umber brown. In 1b a rather broad streak of red from base nearly to hind margin. In 2 a patch of red from close to median to near hind margin. A streak of red in cell somewhat indented on upperside near subcostal almost at the level of origin of nervule 2. In 6, 5, 4, and 3 short broad discal red marks.

H.-w. brick red with a dark brown basal suffusion obscuring a number of black spots better observed on underside. Beyond this suffusion two black spots on the disc in 6 and 5. A dark brown hind-marginal border about 2 mm. wide, its inner edge somewhat edentate at each nervule and internervular ray.

Underside, f.-w. A dull replica of the upperside.

H.-w. Pinkish ochreous with a greenish tinge over base and hind margin. Nervule ends and internervular rays rather broadly powdered with dark brown. Black spots variable and often confluent. The following may be approximately discerned :—One in 8 near precostal, two in 7 (sometimes confluent). One in 6 and 5 just before the middle of these areas. Some irregular spots on discocellulars. Two in cell, the second rather beyond the middle. A spot at base of area 3 and 2. Two spots in 1c, 1b, and 1a ; each of these pairs may be confluent. Some irregular black at base of nervures.

Head and thorax black with a few pale spots. Abdomen black above with yellowish lateral spots. Claws equal.

♀. (= *oreta*, Hew.) Expanse about 70 mm. F.-w. black with reddish brown streaks in 1b, and 2. Costa at base and greater part of cell reddish brown. In cell a black spot near subcostal above origin of 2. Beyond cell in 6, 5, and 4 three rather obscure white marks. (All these markings are very irregular.)

H.-w. reddish brown with some black at base, and a black hind-marginal band about 2 mm. wide, edentate on inner edge at and between the nervules. Black spots corresponding to those on underside.

Underside, f.-w. rather thinly scaled, blackish only from

end of cell to position of white subapical marks. The reddish areas visible as above but paler. Costa dusky ochreous with a black spot at base. Apical and hind-marginal area dusky ochreous striated by the black nervule ends and rays. Only a trace of the white subapical marks.

H.-w. Almost uniformly ochreous, a trace of a greenish tinge about base and on hind margin. Black spots as follows:—One in 9, one in 8, two in 7; the second well beyond end of cell, but not over spot in 6. One in 6 and 5 (one below the other and about 4 mm. from base of those areas). One at base of area 5 on discocellular, one (very small) at base of area 4, two in cell, the second (large) at the level of origin of nervule 2. One in area 4 just beyond its base, and a row of four large spots in a straight line from end of cell to inner margin in 3, 2, 1c and 1b. A basal and a subbasal in 1c, a subbasal in 1b, and two spots in 1a. The ends of nervules are laterally somewhat powdered with brown, but not the internervular rays.

A. orina f. *nigroupicalis*.

This form, described by Aurivillius, differs only by the absence of the discal red marks in the f.-w. An example from Fernando Po is in the Oxford Museum. Aurivillius' specimen is from Kitta, Cameroon. Many Entebbe specimens exhibit the same variation.

A. orina f. *orinata*.

The difference between this and the type form is thus described by Oberthür:—On the upperside the reddish brown spots beyond cell are nearer to the cell. Beneath the h.-w. has two spots outside the cell which are not present in *orina*. Oberthür further remarks that the h.-w. hind margin is yellowish instead of reddish as in *orina*, but he was probably judging of the latter by the colour of the original figure, which is, in fact, redder than the actual type specimen, which I have examined. The differences are so slight as to make the name scarcely worth preserving.

A. orina orineta, subsp.

♂. Expanse 50–64 mm. F.-w. dark sepia. Nearly the whole of the cell (in which there is a black indentation on subcostal near the middle), and 1b, and the basal half of 2 and 3 red, separated only by the rather widely black nervules. In 6, 5 and 4, just beyond cell, broad red streaks separated only by the nervules. On apex and hind margin black internervular rays rather conspicuous.

H.-w. red with a well-defined sepia black basal area on which basal and subbasal spots are just visible. This black area extends

almost to end of cell, and has a well-rounded distal edge more or less parallel to the hind margin. Beyond it is a correspondingly curved red discal band some 5 mm. wide, and a sepia black hind-marginal border about 2 mm. wide, its inner edge regularly but not deeply edentate on and between the nervules.

Underside. F.-w. like the upper but duller, and the costal, apical, and hind-marginal areas dusky ochreous striated by the black nervule ends and internervular rays. Traces of a blackish mark just beyond middle of area 1b.

H.-w. base, costa, and hind margin greenish ochreous, central area dull pinkish. Nervules and internervular rays rather broadly dusted with brown. Black spots on the basal area as follows:—One in 9, one in 8, two in 7 about 2 mm. apart, one at base of 6 and 5, three in cell, the second beyond the middle and the third near end. One at base of 2, a basal, a subbasal, and a central in 1c, two confluent spots about middle of 1b, and the same in 1a.

Head and thorax black with a few pale dots, basal half of abdomen black above, with lateral yellowish spots, terminal segments orange ochreous.

♀. Expanse 64–72 mm. F.-w. sepia brown with red marks much as in ♂ but duller and rather more widely separated by black, and those in 6, 5, and 4 nearly always replaced by white forming a conspicuous discal bar. One example before me from Kampala has all red markings.

H.-w. as in ♂ but paler and duller.

Underside. F.-w. rather thinly scaled, a pale dull replica of upperside, but costa, and apical and hind-marginal areas dusted with dusky white between the nervules and rays.

H.-w. Pattern as in ♂ but dusted all over with whitish scales, or, in some cases, the whole underside is almost devoid of scales and vitreous.

The *orineta* form is distinguished principally by the more continuous and well-defined basal black of the h.-w., especially in the ♀. This peculiarity does occasionally occur in western examples, but it does not appear to be a characteristic feature until we reach the neighbourhood of Uganda.

A. orina is very closely allied to *parrhasia*. I am not quite satisfied that *orina* has not in the West a female form which is practically indistinguishable from that of *parrhasia*. If it has not, then the ♀ *orina* is strangely rare in collections. Apart from the examples of Hewitson's

oreta, which is certainly one form of the ♀, I have seen no ♀ specimens from the West which could be certainly assigned to *orina*, and yet the ♂ is by no means rare. All the ♀♀ from the West, which might otherwise be associated with the species, resemble more or less closely the bred and therefore authenticated ♀♀ of *parrhasia* now at Oxford. A much more extensive material is necessary before we can come to any sound conclusions with regard to this species.

98. *ACRAEA BAXTERI*. Pl. XV, f. 5.

Acræa baxteri, E. M. B. Sharpe, Entomologist, p. 40 (1902).

f. *fulleborni*, Thureau, Berlin Ent. Zeit., p. 133, pl. 2, f. 7 (1903).

f. *subsquamia*, Thureau, Berlin Ent. Zeit., p. 135 (1903).

NYASSALAND; GERMAN E. AFRICA (Mpwapwa, Mamba, Kili-
mandjaro, Langenberg, Meru, Mlolo, N. Usambara); BRITISH
E. AFRICA (Aberdare Hills).

A. baxteri baxteri. Pl. V, f. 10 (♂).

♂. Expanse about 60 mm. F.-w. not very densely scaled, black, with a rosy red flush at base extending nearly to end of cell, slightly beyond middle of area 2, and nearly to margin in 1b and 1a. Beyond cell a subapical series of three more or less transparent spots, separated only by nervules 5 and 6.

H.-w. with a large black patch at base obscuring more or less completely a number of black spots. Beyond this patch a dull rosy red area enclosed by a narrow black marginal border, the nervules well marked black.

Underside f.-w. almost scaleless, merely having a slight dusting of blackish brown at apex and greyish ochreous along costa.

H.-w. with a large chocolate brown basal patch followed by a broad pinkish band, the latter enclosed by a reddish brown border, broader than the black border of the upperside. Upon the chocolate basal patch are the following black markings:—A spot in 8, a broad black streak in 7, the ends of which curve downwards and touch the subcostal and nervule 7. At bases of areas 6, 5, and 4 two spots just separated by very small areas of the ground-colour. Along the edge of the chocolate basal patch are large spots in 3, 2, 1c and 1b. Area 1a is nearly all black, and a long black basal mark in 1b, 1c, and in cell, the latter also having a large spot in its distal half. Head, thorax, and abdomen intensely black, the abdomen with minute white lateral dots. Claws unequal.

♀. Expanse 60 mm. Resembles ♂ but duller and f.-w. more rounded. Subapical transparent spots larger. H.-w. with dark basal patch much reduced, especially from upper half of cell to costa. Underside as in ♂ but duller and rather paler.

A. baxteri, f. *fulleborni*.

This form differs in having the f.-w. rather more translucent, the transparent spot in area 4 is longer, and the black border of the h.-w. is broader than in the type form, also the red colour is of a less rosy tint. On the underside the h.-w. black spots are rather smaller and less confluent, and the pale band is narrower.

A. baxteri, f. *subsquamia*.

This form differs from the type in the following characters:—The f.-w. upperside has the red less extended in area 2, the subapical spots are more transparent, and the blackish border is broader at the hind angle. On the h.-w. the black border is produced inwardly on the nervules, and at the costa the red colour invades the black basal patch. On the underside the h.-w. nervule ends are broadly black, and the black spots are smaller and more separated. One example has greyish spots in the basal area.

At present I have not sufficient material to decide whether the differences between the above forms are of importance. Unfortunately I was unable to secure the type of *A. baxteri* before my visit to the Berlin Museum and was obliged therefore to send a drawing of it, which Dr. Strand very kindly compared with Thureau's types. My figure on Plate V is taken from Miss Sharpe's type now in the Joicey collection.

99. *ACRAEA PENELEOS*. Pl. XIII, f. 27.

Acraea peneleos, Ward, Ent. Mo. Mag., 8, p. 60 (1871); Af. Lep., p. 7, pl. 6, f. 3, 4 (1873); Dewitz, Nov. Act. Nat. Cur., 41, 2, No. 2, p. 19 (part), (1879); * Staudinger, Iris, 9, p. 196 (1896); Aurivillius, Rhop. Aeth., p. 113 (1898); Lathy, Trans. Ent. Soc., p. 186 (1903).

= *fenelos*, Aurivillius, Ent. Tidskr., 14, p. 273, f. 5 (1893).

S. LEONE to CAMEROON; FERNANDO PO; GABOON; CONGO (Kassai R.).

* I give this reference under *peneleos*, but the description is so inadequate that it might refer either to *peneleos* or *penelope*. One of the examples included under *peneleos* in this paper is a red variety of *A. mairiessei*. See p. 286.

♀ *f. helvimaculata*, f. n.

LAGOS.

♀ *f. lactimaculata*, f. n.

FERNANDO PO.

♀ *f. sepia*, f. n.

FERNANDO PO.

A. peneleos pelasgius, subsp. n.

= *A. pelasgius*, Grose-Smith, Novit. Zool., vii, p. 545 (1900),
(♀ non ♂); Rhop. Exot., iii (*Acraca*), vii, p. 25, pl. 7,
f. 9, 10 (1901); Neave, Novit. Zool., xi, p. 346 (1904);
Grünberg (*peneleos*), Sitzb. Ges. nat. Fr., p. 150 (1910).

GABOON; CAMEROON (Ja R.); FR. CONGO (Loango); CONGO
(Kassai R., Bopoto); ANGOLA (Quanza R.); UGANDA (Semliki
Valley, Unyoro, Entebbe, Kampala, Port Alice, Sesse I.).

A. peneleos gelonica, subsp.

Rothschild and Jordan, Novit. Zool., xii, p. 183 (1905).

ABYSSINIA (Upper Gelo R.).

A. peneleos peneleos. Pl. IV, f. 10 (♂), f. 12 (♀). Pl. VI, f. 4
(larva).

♂. Expanse 52-58 mm. F.-w. narrow and somewhat pointed,
but less angulated than in *A. parrhasia*. Costa, apex, hind
margin, and inner margin sepia black, nervures and nervules
black, remainder semitransparent owing to reduction in number
rather than in size of scales. The most distal part of the trans-
parent area more sparsely scaled than the remainder. In 2 a
patch, variable in size, of pink or reddish scales, beneath this, in
area 1b a similar but larger and more persistent patch often
extending as a linear mark to base of wing. A small elongated
pink or reddish submarginal spot in 1a. Sometimes a trace of
red in cell near base. A black spot at base of costa.

H.-w. rosy red in fresh examples but fading to yellowish red.
A grey basal suffusion extending nearly or quite to end of cell,
and a sepia black hind-marginal border about 2 mm. wide, its
inner edge slightly edentate on nervules. Black spots as on
underside but those near inner margin often faintly indicated.

Underside. F.-w. sparsely scaled and vitreous, the costa,
apex, and hind margin scaled with grey to ochreous, the nervule
ends and internervular rays dusted with umber brown.

H.-w. basal suffusion and marginal border greenish grey, the
ends of nervules sometimes rather broadly dusted with brown.
Between them short narrow internervular rays reaching the
margin. Discal area ochreous. Black spots rather variable, as
follows:—An outer row of three spots graduated in size lying

nearly parallel to apical margin, in 7, 6, and 5, rarely a spot near base of 4 and of 3. A spot at base of area 2, followed by a spot in 1c slightly more proximally placed, and a third in 1b slightly more distal than that in 2. A spot in 9, one in 8 against pre-costal, a subbasal in 7, two (occasionally three) spots in cell, the second above origin of nervule 2. A medium sized spot followed by a linear mark (sometimes confluent) on upper part of discocellulars. A basal and a subbasal in 1c. A basal streak and a subbasal spot in 1b and two spots in 1a.

Head black with a whitish dot between the eyes, and two on the collar. Thorax black above with indications of paler markings. Abdomen black above with lateral yellowish spots. Claws unequal.

♀. Expanse 56-64 mm. F.-w. more rounded than in ♂. Costa sepia dusted with red, apex dusted with sepia (about 4 mm. deep) hind margin dusted with sepia, inner margin with red. Nearly the whole of remainder of wing more or less thinly scaled with red but showing a wide range of individual variation in extent and depth of colour. In some examples the red colour predominates, whilst in others it is much broken up by a broad dusky scaling of the nervules. There is usually a patch of blackish scaling in cell near middle, and another on end of cell. In areas 4, 5, and 6 there is often a tendency to the formation of whitish subapical streaks, whilst in one example before me the red scaling is divided in the discal area by an oblique transverse band of blackish thus leaving an outer submarginal row of rather indefinite red spots which become gradually paler in colour as they approach the apex.

H.-w. red, in fresh examples only a little duller than in ♂. Very little grey basal suffusion. The blackish hind-marginal border usually narrower than in ♂ but produced inwardly much further, on and between the nervules.

On the underside, in the f.-w. the dusky areas are replaced by ochreous, on which the nervules and rays are brown.

The h.-w. is slightly brownish ochreous, the basal area and marginal border only a little darker. The internervular rays often do not quite reach the margin. The black spots are as in ♂ but usually have an elongated appearance as though they had "run" in the direction of the nervules. They are also further apart than in the ♂, the three outer spots in 7, 6, and 5, being often very distally placed. The spots in areas 4 and 3 are almost invariably present. It is almost impossible to give a satisfactory description of so variable an insect, but perhaps

the most characteristic *general* feature is the scattered and elongated appearance of the h.-w. spots, and the position of the three outer spots in areas 7, 6, and 5.

Perhaps the species most easily confused with it is the ♀ of *A. orina* (= *oreta*), but in this species the outer spot in 7 is nearer the base than those in 6 and 5, instead of being nearly above them as in *peneleos*, also the wings of *orina* ♀ are much more heavily scaled.

A. peneleos ♀ f. *helvimaculata*. Pl. IV, f. 11.

Expanse 50 mm. F.-w. transparent with a few dusky scales along costa, apex grey black to a depth of 6 mm., hind margin with an inwardly rather suffused grey black border 2 mm. wide. Cell, and areas 2, 1b, and 1a faintly tinged with reddish. A faint blackish linear mark in cell.

H.-w. salmon red with a very slight dusky basal suffusion and a grey black hind-marginal border edentate on the nervules and emitting short, fine, dark internervular rays. Black spots as in typical examples, and beyond the outer row a curved discal band of yellowish white some 3 mm. broad crossed by the nervules which are powdered with red.

Underside. F.-w. dusky areas replaced by ochreous grey and crossed by grey nervules and rays. H.-w. base and hind-marginal border pale brownish pink, outer edge of border having a greenish tint. Nervule ends powdered with umber brown, and between them are fine short brown internervular rays. Central band creamy ochreous. Black spots as in typical form but only one spot in area 1a and spots in 4 and 3 only just visible.

This form, of which two examples occur in the large number of bred specimens received at Oxford from Mr. Lamborn occurs near Lagos and appears to be an occasional aberration. Its appearance has proved of the greatest value as an indication of the identity of the form *lactimaculata* from Fernando Po.

A. peneleos ♀ f. *lactimaculata*. Pl. III, f. 3.

Expanse 58 mm. F.-w. as in *helvimaculata* but entirely devoid of red, the basal area being finely powdered with brownish black scales. H.-w. base as far as outer row of spots sepia grey, the nervures reddish. A hind-marginal border of sepia brown some 3 mm. wide, dusted with orange ochreous on its inner edge towards anal angle, the same colour extending as a fine line along the inner margin. Spots as in typical form, but none in

areas 4 and 3. A central curved band of ivory white narrowest at costa.

Underside. F.-w. as on upperside, dark areas replaced by dusky ochreous, the nervule ends and rays darker. H.-w. basal area as far as central band, and hind-marginal border, dusky ochreous; nervule ends and rays blackish. Central band as on upperside but rather narrower.

Up to the present I have only seen examples of this form from Fernando Po. There is a small series in the S. Kensington Museum and it also occurs in the Tring collection.

A. peneleos ♀ f. *sepia*.

Expanse 60 mm. F.-w. costa, apex, hind margin, and inner margin dark sepia brown. Remainder of wing semitransparent, powdered with dark scales. Traces of whitish scales in areas 2 and 1b. H.-w. sepia brown with a slight powdering of reddish scales especially just beyond end of cell, and at inner edge of hind-marginal border. The latter a still darker brown. Inner margin ochreous.

Underside. F.-w. as above but brown replaced by dusky ochreous, striated by dark nervule ends and rays. H.-w. basal portion dull greenish ochreous, followed by a curved central band of dusky white. Hind-marginal border about 5 mm. wide, dusky ochreous, inwardly edged with sepia brown, and striated by brown nervule ends and rays. Spots as in typical forms but none in 4 and 3.

This form also seems to be peculiar to Fernando Po. A fine series of specimens in the British Museum collection, received by the late Mr. Hewitson from the locality named, show a gradation from ordinary forms of ♀, through f. *lactimaculata* to f. *sepia*, with numerous intermediates.

A. peneleos pelasgius, subsp. Pl. IV, f. 2 (♂).

♂. Expanse 45-56 mm. F.-w. sepia black. Cell and base of area 2 and 1b rather thinly scaled and partially transparent. Beyond cell the basal portions of areas 6, 5, and 4 are still more transparent especially outwardly, and there is a small semi-transparent patch in 2 often with a few pinkish scales in the centre. In the middle of area 2 a large rounded spot rather thinly scaled with pale orange red, beneath this a similar but rather larger spot in 1b, and a linear mark of the same colour in 1a.

H.-w. with a sepia black basal portion, its outer edge rather straightly defined across the wing, and extending as far as the origin of nervule 2. Hind-marginal border sepia black, 2 to 3 mm. wide, its inner edge somewhat edentate on the nervules. Central area orange red. Black spots as on underside but largely obscured by the basal suffusion.

Underside. F.-w. as above, but costa, apical area, and hind margin ochreous brown, nervule ends and rays dark brown. Remainder nearly devoid of scales, and vitreous. The reddish spots of upperside reproduced in pink. A black spot at base of costa.

H.-w. Basal portion umber brown outwardly inclined to chestnut, followed by a dark ochre-yellow central band, and an umber brown hind-marginal border inwardly inclined to chestnut. Nervules and rays dark brown. Black spots as in typical *peneleos*. Usually only two in cell and none in 4 and 3. Head, thorax and abdomen as in typical *peneleos*.

♀. Expanse about 62 mm. F.-w. more rounded than in ♂. Sepia brown. A subapical series of three transparent spots in 6, 5 and 4 progressively increasing in size, and beneath these a small pink spot in area 3. A somewhat irregular pink spot in area 2 near middle, and beneath it a similar but broader spot in 1b.

H.-w. Basal brown suffusion outwardly less well defined than in ♂. Remainder of wing dull orange red with an ill-defined dark brown hind-marginal border consisting of an elongated triangular powdering of the nervules and rays all more or less coalescent at margin. Black spots as in *peneleos*.

Underside. F.-w. devoid of scales and vitreous, except costa, apical area and hind margin, which are rich umber brown with darker nervules and rays, the pink spots of upperside faintly showing through.

H.-w. Basal area deep reddish brown, followed by a dark ochreous central band narrower than on upperside, and a hind-marginal band of somewhat lighter brown, 7 mm. wide at nervules 3 and 4, and striated by dark brown nervules and rays.

A. peneleos gelonica, subsp.

♂. Expanse 54 mm. Differs from subsp. *pelasgius* in the following points:—The f.-w. is transparent except costa, apical area, and hind and inner margins, which are sooty black. Main nervures, middle and end of cell, and base of areas 2 and 1b powdered with black. No pink spots, but often a few whitish

scales in area 1b. H.-w. basal black of rather less extent, hind-marginal border black and rather broader. Underside. H.-w. basal area more chestnut brown, marginal border darker and inclined to reddish at its inner edge.

The larva of *A. peneleos* (Pl. VI, f. 4) from Oni, near Lagos, may be described as follows:—

Ground-colour dark brown with transverse striae of a darker tint, bordered with yellow. Lateral line and legs yellow. Head bright chestnut. In the actual larva all the spines are black, but according to Mr. Lamborn's notes the sublateral spines are yellowish. There may possibly be some variation in this respect.

True *peneleos* seems to occur from S. Leone through Lagos and as far as Fernando Po, producing the aberrant forms of ♀ above described. From Fernan Vaz and right across the Congo State we find the development, at first somewhat irregular, of the dark-coloured underside of the h.-w. with its central ochreous band. On the Kassai R. forms are found which vary between *peneleos* and *pelasgius*, and thence the latter form is predominant. It is very common at Entebbe, whence its distribution extends north-eastwards into Abyssinia, where it is represented by the form *gelonica*.

100. *ACRAEA PELOPEIA*. Pl. XIII, f. 28.

Acraea pelopeia, Staudinger (*peneleos* var.), Iris, 9, p. 192 (1896), Aurivillius, Rhop. Aeth., p. 113 (1898).

CONGO (Kassai R., Aruwimi R., Ft. Beni).

♂. Expanse 68 mm. F.-w. sepia black. Cell, basal portions of 6, 5, 4, 3, 2, and nearly all 1b, rather thinly scaled and partially transparent. A slight submarginal powdering of whitish scales in 1b. H.-w. with a dark sepia grey basal suffusion extending slightly beyond origin of nervule 2, and outwardly approximately determined by a line drawn from middle of costa to middle of inner margin. Discal area deep orange red (probably rosy red when alive). A well-defined brown-black hind-marginal border about 2 mm. wide, its inner edge slightly edentate on the nervules. Black spots as beneath, but obscured by basal suffusion.

Underside. Costa, apical area and hind margin dusky ochreous, striated by the nervules and rays which are broadly powdered with dark brown. The ochreous marginal border

gradually obscured towards the hind angle by a sepia-brown suffusion. A black spot at base of costa, and some black at base of area 1b.

H.-w. Basal area and hind margin greenish ochreous, central area ochreous. The brown nervules towards the margin heavily dusted with dark brown, the dusting being widest before it reaches the margin, thus giving the nervules a swollen appearance. Between them the internervular rays, though more slender, are similarly indicated. Unlike *peneleos* these rays extend to the bases of the internervular areas. A series of black spots, most of which are rather large. In area 7, two, much closer together than in *peneleos*. Beneath the outer spot a smaller one more distally placed in area 6, and beneath this a dot in 5. On the upper part of discocellulars a spot of variable size, sometimes confluent with another just beneath it. In cell two or three spots, the second over origin of nervule 2, and the third, when present, very small. Sometimes a spot at base of area 3. A spot in 2 near its base, followed by one in 1c and in 1b, nearly in a straight line. A basal and a subbasal in 1c. Beneath the latter a spot in 1b, and more proximally placed a spot in 1a. A spot in 9 and in 8.

Head black with a pale dot between eyes, two pale tufts on collar. Thorax black above with two pale spots. Abdomen black above with yellowish lateral spots. Claws unequal.

The ♀ is unknown to me.

The late Dr. Staudinger in his paper in *Iris* 1896, gave a description of this species. This description is somewhat involved, and consists largely of a comparison of *penelope*, *peneleos*, *parrhasia*, and the present form. He concludes by saying that, should it be found through the acquisition of further material to be a distinct species, he proposes for it the name *pelopeia*. After having seen the insect described, I found it agreed in all respects with two ♂♂ in the Tring collection. I cannot claim to have certainly established its specific distinction, but at present at least I propose to keep it separate from *peneleos* which it closely resembles. The peculiar appearance of the nervules on the h.-w. underside scarcely suffices to distinguish it from some examples of *peneleos* which exhibit a similar tendency. On the other hand, the internervular rays in all forms of *peneleos* are comparatively short, whilst in this species they extend to the bases of their respective areas. The whole insect is of a larger and stouter build. The two spots in

area 7 of the h.-w. are closer together than in *peneleos*, whilst finally, though the male armature is, like that of several allied forms, simple in structure and but little distinctive, it appears to present certain constant differences. The acquisition of a ♀ specimen may help to decide its true affinity. In the meantime I prefer to keep the form separate from *peneleos*, under the name which the late Dr. Staudinger proposed. That author's example is described as from the Upper Congo, without precise locality. One of the Tring examples is labelled Aruwimi, and the other Luebo, Kassai River. These localities are rather far apart, the latter being apparently some 750 miles S.W. of the former. The two examples do not, however, appear to differ in any noticeable particular. In addition to these two specimens there are also in the Tring collection several examples taken near Ft. Beni in the northern part of the Congo region. These I must refer to the same species. They differ only in having a browner ground-colour, and in the h.-w. a duller shade of red.

101. *ACRAEA GROSVENORI*. Pl. II, f. 9 (♂). Pl. XIII, f. 24.

Acraea grosvenori, n. sp.

CONGO (Rutschuru R., S. of Albert Nyanza).

♂. Expanse 64 mm. F.-w. sepia black with a tendency to thinner scaling and partial transparency in cell, in discal portions of areas 6, 5, and 4, basal half of 3 and 2, and the greater part of 1b. At the extremity of partially transparent area a slight dusting of pink scales in area 4, beneath this, in 3, a slightly more distinct mark, beneath this, in 2, an elongated ill-defined pink spot, and in 1b a larger ovate pink spot, the whole area traversed by a fine dark internervular ray which is laterally dusted with pink nearly to the base.

H.-w. brick red. A sepia basal patch outwardly ill defined, obscuring a few minute black spots. A very narrow marginal dusting of sepia black, most distinct on and between the nervules. On the red area the nervules and long internervular rays are distinctly perceptible in a slightly darker colour.

Underside. F.-w. Costa, apical area, and hind margin deep orange ochreous striated by the darker nervules and rays. A black spot at base of costa, and base of area 1b. Remainder of wing vitreous and almost devoid of scales. A fine dark line round hind margin.

H.-w. Deep orange ochreous without any basal suffusion or marginal border, though the dark basal portion of upperside

gives the base a slightly shaded appearance. The nervures, nervules and rays are very narrowly but distinctly outlined in dark brown. The rays are long and reach almost to the bases of their respective areas. A fine dark marginal line. Black spots, very small, as follows:—One in 9, one in 8 against pre-costal, one in 7 near base, two, the second very minute, on upper part of discocellulars. Two in cell, the second before the origin of nervule 2. One in 2 near base, followed by a double spot in 1c, and a dot in 1b. Some black at base of nervures 1b and 1a. In 1c a subbasal spot, another in 1b more distally placed, and a third in 1a, level with that in 1c.

Head black, with a minute dot between, and two behind, the eyes. Thorax black. Abdomen black above with yellow lateral spots on the more distal segments. Claws unequal.

The ♀ is unknown to me.

The foregoing description is taken from the type in the Tring collection.

A second male differs only in having a rather more extensive dark basal patch in the h.-w., and a slightly broader and more continuous hind-marginal border.

Both examples were taken in February 1908, in the Gallery Forest, Rutschuru River, at a height of 1000 metres.

This species has the appearance of being very distinct, the h.-w. underside not resembling that of allied forms. The basal spots also are very small and scarcely observable on the upperside. In this latter respect it is distinguishable from *pelopcia*, and though it presents the long internervular rays of the latter the nervules are delicately outlined and not heavily dusted with brown. There appears to be a recognisable difference in the ♂ armature, but paucity of material has prevented my studying this feature to an adequate extent.

I have pleasure in dedicating the species to my friend Mr. G. H. Grosvenor, M.A., of New College, Oxford.

102. *ACRAEA PARRHASIA*. Pl. XV, f. 2.

Acraea parrhasia, Fabricius, (*Pap.*) Ent. Syst., 3, 1, p. 175 (1793);

Aurivillius (metam.) (*peneleos*), Ent. Tidskr., 14, p. 274,

pl. 4, f. 2, 2a, 2b (1893); Ent. Tidskr., 15, p. 273 (1894);

Staudinger, Iris, 9, p. 200 (1896); Aurivillius, Rhop.

Aeth., p. 113 (1898); Lathy, Trans. Ent. Soc., p. 186

(1903); (?) Grünberg, Sitzb. Ges. nat. Fr., p. 150 (1910).

= *peneleos*, Aurivillius, Ent. Tidskr., 14, p. 274 (1893).

S. LEONE ; LAGOS ; CAMEROON ; FERNANDO PO ; ? UGANDA (Sesse I.).

♀. f. *oppidia*, Hewitson, Ent. Mo. Mag., 11, p. 131 (1874) ;
Exot. Butt. (*Acraea*), pl. 7, f. 49, 50 (1875).

FERNANDO PO.

♀. f. *parrhoppidia*, Staudinger, Iris, 9, p. 201 (1896).

CAMEROON.

♀. f. *leona*, Staudinger (*A. leona*), Iris, 9, p. 199 (1896).

= *A. igola leonina*, Bethune-Baker, Ann. Nat. Hist., 12,
p. 325 (1903).

A. parrhasia parrhasia. Pl. III, f. 1 (♀). Pl. IV, f. 3 (♂).
Pl. VI, f. 3 (larva).

♂. Expanse 54–64 mm. F.-w. narrow, and pointed at apex. Costa, apex, hind, and inner margins black. Cell, areas 2 and 1b, semitransparent, rather thinly powdered with black. The cell at base and extremity tinged with red. Area 2 occupied by a large semitransparent spot dusted with red, sometimes fading outwardly to creamy white. Base of area 1b dusted with red and near margin a large fairly well-defined spot also dusted with red. Beyond cell a subapical bar of three elongated semitransparent patches between the nervules, dusted with black basally, and sometimes with creamy white distally. Beneath these a similar but shorter and rounder patch in area 3. Nervules 2, 3, and 4 heavily dusted with black especially towards margin.

H.-w. with a sepia black basal suffusion rather well defined outwardly, and obscuring numerous black spots which are more easily distinguished on the underside. A sepia black marginal border 2–3 mm. wide and inwardly somewhat edentate on and between the nervules. Central area of wing bright red (rosy red in fresh examples), yellowish at inner margin.

Underside. F.-w. sparsely scaled and rather vitreous, the red areas showing through from the upperside. Costa, apex, and hind margin ochreous traversed by brown black nervule ends and rays. Some brown black dusting at hind angle, and costa and area 1b black at base. A fine dark brown line round hind margin. Median nervure and basal portions of nervules 2 and 3 laterally dusted with large ochre-yellow scales.

H.-w. Ochre yellow with a greenish basal suffusion and hind-marginal border. A fine brown hind-marginal line. Beyond cell the nervules are narrowly powdered with dark brown, and between them are short, fine, brown internervular rays which reach the margin. Black spots as follows :—One at base in area

9, one in 8 against precostal, two in 7 not far apart, the outer one just over, or slightly beyond origin of nervule 7. (Sometimes a minute spot between these.) In areas 6, and 5, two small spots (sometimes absent), and that in 5 may be either more proximally or more distally placed than that in 6. On the upper part of discocellulars two spots which may be minute, or large and confluent. In cell, two, and sometimes three spots, the second of which is large, and the third varies from being totally absent, to being large, and confluent with the second. A spot at base of area 2. A basal, a subbasal, and a distal spot in 1c, two median spots in 1b, and two in 1a.

Head black with a white dot behind each eye, and a transverse white streak. Thorax black with whitish lateral marks. Abdomen brownish black above, with yellowish lateral spots and segmental streaks. Claws equal.

♀. Expanse about 70 mm. Wings much more rounded than in ♂. F.-w. Dull sepia brown. A central reddish streak in area 1b, and 2, and base and distal portions of cell dusted with dull red. The subapical streaks are much as in the ♂ and may be transparent or have a whitish appearance due to a sparse clothing of brownish white scales; the patch beneath them in area 3 is reddish.

H.-w. with a basal suffusion and hind-marginal border as in ♂ but browner, the central area dull brownish red.

Underside. F.-w. much as in ♂ but without the ochreous scaling on median nervure, etc. H.-w. as in ♂ but rather duller ochreous.

Head, thorax, and abdomen more distinctly spotted than in ♂.

parrhasia ♀ f. *oppidia*.

Whilst the few examples of ♀ *parrhasia* which I have seen from S. Leone are as already described, all those from near Lagos present a closer approach to the form named *A. oppidia* by Hewitson. This form which occurs at Fernando Po, is characterised by its somewhat richer colouring and by the greater development of white scales in the subapical area of the f.-w. which here form a definite white bar, and in the h.-w. there is much less dark basal suffusion.

parrhasia ♀ f. *parrhoppidia*.

In this form the red extends all over the cell, and over nearly the whole of areas 1b and 2. There is a blackish mark in cell. The whitish subapical streaks are replaced by clear areas.

parrhasia ♀ f. *leona*. Pl. III, f. 2.

Smaller than average ♀ ♀ of *parrhasia*. The f.-w. almost transparent but having a brownish tinge in reflected light. A faint trace of a blackish mark in middle of cell, costa apex, and hind margin finely dusted with brown scales.

H.-w. thinly scaled with reddish brown, no basal suffusion, but a narrow brownish hind-marginal border, the ends of nervules, and the internervular rays being slightly marked in darker brown. The underside resembles the upper but the f.-w. is still more devoid of scales, and the h.-w. is ochreous brown. There are black spots as in *parrhasia*, but those beyond the cell are usually wanting.

The determination of the identity of Staudinger's *A. leona* has been a matter of considerable difficulty. After having seen the type however I find that the form is by no means rare in collections. It is always ♀ and always from S. Leone, and though ordinary ♀ ♀ of *parrhasia* also come from S. Leone, still I think there can be little doubt that it is a form of that species. Moreover in the Staudinger collection in Berlin there is a ♀ example of *parrhasia* from the same locality which is quite intermediate between the typical ♀ and *leona*.

The true affinities of many of these black and red semitransparent forms are extremely difficult to establish, and some of them have entailed laborious, if interesting, research. I am by no means satisfied that I have even now quite unravelled the difficulties. My work has however been greatly assisted by the magnificent collections which the Oxford Museum owes to the generosity of Mr. W. A. Lamborn, who has bred large companies of *A. parrhasia* and of other species with which it has formerly been confused. *A. parrhasia* can at least be easily distinguished from *A. peneleos* and its forms, since the male tarsal claws of the former are symmetrical.

The larva and pupa of *A. parrhasia* have been figured by Aurivillius (*l. c.*) under the name of *peneleos*.

He describes the larva as brown, with very long dorsal spines. Head, dorsal, and dorsolateral spines blackish, and arising from dark transverse bands. The lower lateral spines short and brown at base.

Pupa. Pale with the usual black markings. Dorsal abdominal spots widely separated, quadrate, and with pale central spots. Well-developed short tubercles on segments 2-7.

I have figured (Pl. VI, f. 3) one of the larvae sent by Mr. Lamborn from Lagos. They agree with Aurivillius' description though his examples were taken in Cameroon. It may be added that there is a fairly conspicuous pale lateral line, and a whitish bifurcated mark on the head. The pupae also agree with Aurivillius' figure.

The ♂ *A. parrhasia* presents comparatively little variation though the ♀ is less stable. Generally speaking the latter tends to greater transparency in the extreme western part of its range, this feature reaching its maximum development at Sierra Leone in the ♀ f. *leona*. The latter however occurs in company with examples which differ but little from those bred further east, near Lagos, these forming a perfect transition to the *oppidia* form at Fernando Po. From thence eastward the transparency appears to increase again slightly since Cameroon examples are described as resembling the *oppidia* f., but having more transparent f.-w., more faded, yellowish-red h.-w., and an inwardly less sharply defined outline of the f.-w. white subapical spots.

103. *ACRAEA PENELOPE*. Pl. XIII, f. 18.

Acraca penelope, Staudinger, Iris, 9, p. 195 (1896); Aurivillius, Rhop. Aeth., p. 113 (1898); Grünberg, Sitzb. Ges. nat. Fr., p. 150 (1910).

= *pomponia*, Grose-Smith, Novit. Zool., vii, p. 545 (1900); Rhop. Exot. (*Acraca*), 7, p. 25, pl. 7, f. 7, 8 (1901); Neave, Novit. Zool., 11, p. 346 (1904).

CONGO (Kassai R., Benabendi, Kwilu, Aruwimi R., Ft. Beni); UGANDA (Msarosaro, Toro, Port Alice, Mondo, Entebbe, Kampala, Sesse I.).

♀ f. *argentea*, f. nov.

UGANDA (Entebbe).

♀ f. *exalbescens*, f. nov.

UGANDA (Toro, Kampala).

♀ f. *penella*, f. nov.

UGANDA (Kitanwa).

A. penelope vitrea, subsp. nov.

BRITISH E. AFRICA (Tiriki Hills, Kabras).

A. penelope derubescens, subsp. nov.

TOGOLAND (Misahöhe Station).

A. penelope translucida, subsp. nov.

LAGOS (Oni).

A. penelope penelope.

♂. Expanse 46–50 mm. F.-w. deep brown black. Beyond cell, a subapical row of three elongate transparent spots separated only by nervules 5 and 6 which are black. Beneath these in area 3 a smaller partially transparent spot. Near base of area 2 a large ovate orange red spot, and beneath it in 1b a rather larger similar spot. Often a small red mark beneath these in 1a. In many examples all these spots are enlarged, forming a nearly continuous band across the wing in which case the spots in 2 and 1b are thinly scaled with red and there may be a few red scales on that in 3.

H.-w. brown black at base, the outer edge of this colour varying somewhat in regularity of definition but usually extending as far as origin of nervule 2. A central band of orange red, its outer edge slightly convex, but indented on the nervules by the brown black marginal border which varies in width from 3 to 5 mm. Black spots of underside show faintly on the dark basal colour.

Underside. F.-w. costa, apical area, and hind margin pale to rich ochre yellow. Remainder of wing may be almost scaleless or may be thinly scaled with dusky orange ochreous, except on the subapical transparent spots. A thin black line round apex and hind margin, the nervule ends rather broadly black and joining a fine black marginal line, and the short internervular rays narrowly black reduced to a fine point at margin. The black powdering of nervules and rays becomes coalescent at the inner edge of the apical and marginal ochreous, which latter colour it tends to obliterate in areas 2 and 1b. A blackish streak at base of cell and 1b.

H.-w. clear ochre yellow, often with a greenish tint in the basal half. In some examples a slight reddish tint in cell and 1c. The hind margin over an area corresponding to the border above, has a slightly darker shade varying in tint from greenish to orange ochreous. On this area the nervule ends are rather broadly black, their outer extremities joining a fine black marginal line. Between them are short black internervular rays broadest at their inner end and tapering outwardly to a fine point which does not reach the margin. In many examples the inner ends of these rays are confluent with the black nervules and so form a continuous dark inner edge to the hind-marginal border. On the basal half of the wing are black spots so variable in size and number as to be little value for purposes of identification. An examination of a series of examples shows that there is rarely a spot in 8 near precostal and when

present it is very small. The two usual spots in area 7 are apparently always present, though sometimes extremely small. The maximum number in cell is three, only the second of which is invariably present, and placed at or before the origin of nervule 2. There seem never to be spots in areas 3 and 4, and very rarely in 5. Sometimes that at base of area 2 is missing. The most constant are those in 1c, 1b, and 1a in which areas there appear always to be two spots.

Head black with a white dot between the eyes and two on collar, thorax black above with pale lateral spots, abdomen black above with yellowish lateral dots. Claws equal.

♀. Expanse 46-50 mm. F.-w. more rounded than in ♂. Transparent and red spots usually rather larger and all the colours of both wings a trifle duller.

H.-w. as in ♂, but the inner edge of hind-marginal border rather more regularly curved.

Underside much as in ♂ with similarly variable black spots.

A. penelope ♀ f. *argentea*. Pl. IV, f. 8.

General colouring paler, and the h.-w. hind-marginal border broader than in typical form, and on it the short darker nervule ends and rays can be distinctly seen.

Underside. F.-w. ochreous areas replaced by silvery grey. H.-w. basal portion and hind-marginal border silvery grey, central area faintly pink.

A. penelope ♀ f. *exalbescens*.

Resembles typical ♀ in pattern, but all reddish areas replaced by yellowish white, and the h.-w. hind-marginal border as broad as in f. *argentea*.

Underside. Ochreous areas replaced by yellowish white rather dusky on f.-w. costa, apex, and hind margin and on h.-w. basal area and hind-marginal border.

A. penelope ♀ f. *penella*, f. nov. Pl. V, f. 3.

F.-w. Basal half reddish brown slightly blackened at base, and about end of cell. Apex and hind margin brownish black tending to reddish towards hind angle. From subcostal to inner margin a broad transparent discal band divided into large spots by the nervules which are slightly dusted with brownish.

H.-w. tawny red, somewhat blackened at base, the spots of underside irregularly indicated. Hind margin border of medium width thickly dusted with sepia, its inner edge ill defined and edentate on and between the nervules.

Underside. F.-w. much as above but costa, apex, and hind margin tawny ochreous with blackish nervules and internervular rays. H.-w. base nearly to end of cell reddish tawny, followed by a discal band of pale pinkish ochreous and having a broad, well-defined marginal border of tawny ochreous striated by the black nervule ends and short internervular rays. The reddish basal portion more heavily spotted than is usual in *penelope*. Two spots in 7, the second just beyond origin of nervule 7, and beneath it but slightly nearer margin a spot in 6, and in 5. A dot at base of area 5 on discocellular; a basal, a central, and a distal spot in cell (the latter may be an aggregation of dots) a spot at base of area 2. Three spots in 1c, the third just beneath origin of nervule 2, and beneath it two spots in 1b. A subbasal and a distal in 1a.

This interesting form is at once distinguished by the tawny red basal area of h.-w. underside which brings into prominence the central pale band, thus producing a close resemblance to *peneleos pelusgius*. The pattern is doubtless modified in mimetic association with that species.

A. penelope vitrea, subsp. nov. Pl. IV, f. 7.

♂. F.-w. Costa, apical area, and hind margin sepia black. Cell and basal portions of 6, 5, 4, 3, 2, 1b, and 1a dusted with the same colour. Remainder perfectly transparent with a dusting of orange red in areas 2 and 1b, and an orange red linear mark in 1a. H.-w. orange red, usually with a less extensive basal suffusion, and having a narrower hind-marginal border.

Underside resembles that of typical *penelope*.

The ♀ is unknown to me.

A. penelope derubescens, subsp. n. Pl. IV, f. 5.

♂. Resembles subsp. *vitrea*, but in the h.-w. the central area is crimson, much reduced in width, and does not reach the costa. A few brown scales can be seen with a lens in areas 1b and 2. On the underside of f.-w. the ochreous areas are replaced by pale greenish, and in the h.-w. the basal area and hind margin are pale green, and the central band creamy white.

Of this form there are three ♂♂ in the Berlin Museum. One has the black nervule ends and rays in h.-w. underside not joined together as they are in the type figured, and has an additional spot in areas 6 and 5. All three examples were taken at Misahöhe Station near Tongbe in Togoland.

A. penelope translucida, subsp. n. Pl. IV, f. 4 (♂), f. 6 (♀).

♂. Rather smaller than typical *penelope*. F.-w. transparent. Costa, apical area, and hind margin black, this colour being somewhat edentate on the nervules. Some black powdering in and beyond cell, and a slight blackish longitudinal streak in cell. A little dusting of red scales in basal half of area 1b, and distal portion of 1a.

H.-w. much as in typical *penelope* but dark basal suffusion only slight and hind-marginal border rather narrower.

Underside as in typical *penelope*, but the greater part of f.-w. devoid of scales and vitreous. H.-w. clear ochre yellow with a greenish tinge at base and on hind-marginal border.

♀. F.-w. more rounded than in ♂ but otherwise similar, though more thinly scaled, the dark portions having a grey appearance.

H.-w. salmon pink, the spots of underside irregularly reproduced. Hind margin powdered with sepia scales, the nervule ends and rays slightly accentuated. Underside much as in ♂ but the nervule ends and rays brownish rather than black. The usual variability occurs in the black spots.

This form has lately been bred near Lagos by Mr. W. A. Lamborn. Unfortunately none of the larvae were preserved on that occasion, and a further supply has not yet been obtained. They feed on the same plant as the larvae of *A. peneleos*. Miss Sharpe's *A. newtoni* from the Island of St. Thomas is probably also a form of *A. penelope*. I have not however been able to see the type of this form which is in the Lisbon Museum, my appeal to the authorities of that institution not having elicited the courtesy of a reply.

104. *ACRAEA NEWTONI*.

Acræa newtoni, E. M. B. Sharpe, Proc. Zool. Soc., p. 554 (1893); Smith and Kirby, Rhop. Exot. (*Acræa*), 5, p. 17, pl. 5, f. 8, 9 (1894); Aurivillius, Rhop. Aeth., p. 113 (1898).

SÃO THOMÉ.

♂. Expanse 50 mm. F.-w. elongated, black brown. A sub-apical band of three dusky translucent spots separated by nervules 6 and 5, and a somewhat larger similar spot near base of area 2.

H.-w. black brown showing a few black spots near base and having a narrow (3 mm.) orange red curved central band which scarcely reaches the inner margin.

Underside. F.-w. vitreous the pattern of upperside showing through. H.-w. base greenish grey, the band of upperside represented in pink. Hind-marginal border grey brown. An outer row of black spots of which there are three in 7, 6 and 5, the first well beyond origin of nervule 7. A spot near base of area 2 followed by one in 1c and 1b, all in a straight line at right angles to inner margin. Also two spots in cell the second above origin of nervule 2, a subbasal in 7, a subbasal in 1c, a basal and a subbasal in 1b, and a spot in 1a.

Head and thorax black with a few whitish dots. Abdomen black above with lateral yellowish spots. Palpi white.

I have not had an opportunity of examining the type of this species which is in the Lisbon Museum. I am inclined to regard it as a local form of *A. penelope*, Staud. It occurs only in the Island of St. Thomas. The ♀ is not yet known. Should this form ultimately prove to be conspecific with *penelope* the name *newtoni* will take precedence.

105. *ACRAEA MAIRESSEI*. Pl. 13, f. 19.

Acraea mairessei, Aurivillius, Ent. Tidskr., 25, p. 93, f. 33 (April 1904).

= *servona* (nec Godt.), Aurivillius, Rhop. Aeth., p. 113 (1898).

= *melanosticta*, Em. M. B. Sharpe, Entomologist, p. 181 (July 1904).

CONGO (Ligunda, Kassai, Betw. Ft. Beni and Ituri R.);
UGANDA (Toro, Unyoro, Entebbe, Nandi, Pt. Alice).

f. *dewitzi*, Aurivillius, Ent. Tidskr., p. 94 (1904).

= *peneleos*, var., Dewitz, Nov. Act. Nat. Cur., 41, 2, p. 19, pl. 1, f. 7 (1879).

CONGO (Kassai).

♂. Expanse 50-54. F.-w. black. At end of cell an irregularly shaped transparent spot often indented on the basal side by the ground-colour. Beyond cell a series of three subquadrate transparent spots separated by the black nervules. A large transparent spot at base of area 2, not always extending right into angle between median and nervule 2. The discal edge of this spot powdered with black scales. Beneath it a small ill-defined transparent spot. Examined by reflected light the inner and sometimes also the subapical spots are seen to be slightly scaled with yellowish white. H.-w. black, slightly less dense in basal area, on which the black spots corresponding to those beneath, can be discerned. An irregular discal patch of

lemon ochreous beginning in area 6 and ending in 1b, its inner edge edentate in cell, and its outer edge edentate between the nervules especially in 6, 5 and 4.

Underside. F.-w. Costa, apical area, and hind margin dusky brown ochreous, striated by the black nervules, which join in a fine marginal line. In areas 6-2 short black internervular rays beginning at inner edge of the yellow colour and rapidly diminishing to a point some distance short of the margin. Remainder of wing rather thinly scaled with black except in way of transparent spots, these having a slight dusting of yellowish white scales as on upperside.

H.-w. lemon ochreous with a greenish tint at base and over outer marginal border. On the latter the nervule ends are rather broadly black and join a fine marginal black line. Between them are short black internervular marks separated from margin by a distance about equal to their own length. Black spots as follows :—One in 9 at base, two in 7 occasionally coalescent, one at base of area 6 (rarely absent), two on discocellulars (these, and that in 6, often confluent). One in cell near base. A large crescentic spot in 1c (rarely divided into two). Two in 1b (sometimes coalescent), a basal linear mark in the same area, and two spots in 1a.

In one (♀) example before me the internervular marks are inwardly confluent with the black powdering of the nervules.

Head black with a white dot between eyes and two on collar. Thorax black with some yellowish dorsal and lateral spots. Abdomen black with yellowish lateral spots. Claws equal.

♀. Expanse 52-54 mm. Resembles ♂ but the transparent spots, especially the subapical series tend to be larger, except that in 1b, which is sometimes wanting. The h.-w. patch is, in one example, white.

A. mairessei f. *dewitzi*.

F.-w. thinly scaled with black. The transparent spot in cell is reduced to a mere streak, as also is that in 1b. The h.-w. patch is tawny red, and reaches the costa and inner margin. The underside is like that of the typical form but the yellow areas are of a more golden tint, and the internervular marks are rather more slender. They are not proximally confluent with the black of the nervules.

The example above referred to was described by Dewitz as a variety of *A. peneleos*. Aurivillius has pointed out (*l.c.*) that it appears to be a red form of his *mairessei*,

and having seen the specimen I agree entirely with this view. It is remarkable that these small black and yellow *Acraeas* occasionally produce forms in which the yellow is replaced by red, whilst the red and black species produce yellow and black varieties. Thus there is a ♀ form of *A. penelope* with yellow h.-w., and a ♀ form of *servona* with the typical yellow replaced by red. The case of *orestia* is still more peculiar since we have the red, an orange intermediate, a yellow, and a colourless form.

The present species has a wide distribution, extending from the neighbourhood of the Kassai R. to Entebbe.

106. *ACRAEA MELANOXANTHA*.

Acraea melanoxantha, Em. M. B. Sharpe, Proc. Zool. Soc., p. 193, pl. 17, f. 4 (1891); Aurivillius, Rhop. Aeth., p. 114 (1898).

MT. ELGON.

♂. Expanse about 44 mm. F.-w. brownish black. At end of cell a large lemon ochreous spot occupying the outer third of cell, its proximal edge indented by the ground-colour, and beneath it at base of area 2 a somewhat similar lemon ochreous spot. Beyond cell, midway between cell end and apex a slightly curved row of three subquadrate spots. These spots are translucent and appear to be white, but if examined by reflected light only they are seen to be lightly scaled with lemon ochreous.

H.-w. brownish black with a lemon ochreous central patch, occupying basal part of 6, 5, 4, 3 (very slightly) and 2, extending thence in a narrow continuation nearly to inner margin, and also occupying the lower outer half of cell. On the dark basal portion the spots of underside are just visible, and in addition there is a black mark at extreme base of areas 5 and 4 on the discocellulars and plainly visible on the pale yellow ground. On the outer dark coloured half of the wing the dark internervular rays are visible.

Underside. F.-w. costa pale greyish ochreous, remainder of wing blackish with pale spots as above but the large yellow spots are only very slightly scaled and inclined to be larger than above. At apex between the branches of subcostal, and along apical and hind-marginal border, between the black nervules and rays, pale lemon ochreous.

H.-w. lemon ochreous, slightly dusky over those areas which are black on upperside. The marginal border is striated by

rather heavily sepia powdered nervule ends and rays. The latter though coming to a point at margin do not stop short of the margin as in *mairessei*. The inner edge of this striated border is often tinged with reddish brown. Black spots as follows:—Two in seven, the second just beyond origin of nervules 7 and 6, one at base of 5 and 4 on discocellulars. One spot (sometimes absent) in cell, a subbasal and central spot in 1c, two spots in 1b, and one in 1a. Some irregular black at base of nervules.

Head black with a lemon ochreous transverse line and two ochreous tufts on collar. Thorax black with a few pale lines and spots. Abdomen black above with pale lateral spots. Claws equal.

I have not seen a ♀ of this species. The colouring of the underside is rather variable. The foregoing description is taken from the type, but another example has the basal and marginal areas of the h.-w. underside reddish brown, whilst another has the whole of the pale ochreous portions of the underside of both wings (except the spots of f.-w. and the central patch of h.-w.) rich chestnut brown, the marginal border of h.-w. being rather blacker towards its inner edge. In this example there is no black spot in the cell.

All the examples which I have up to the present examined were taken on the southern slopes of Mt. Elgon. But for the absence of the pale spot in f.-w. 1b, and the fact that the spots in 2 and cell are, on the upperside, fully scaled with yellow, the species has a very similar appearance to *A. mairessei*, Auriv., and indeed may ultimately prove to be a local race of that species.

107. *ACRAEA CONRADTI*. Pl. XIII, f. 21.

Acraea conradti, Oberthür, *Etud. d'Ent*, 17, p. 22, pl. 1, f. 10 (1893); Aurivillius, *Rhop. Aeth.*, p. 112 (1898).

GERMAN E. AFRICA (Nguelo, Usambara, Amani, Mkulumusi); NYASSALAND (Mlanji Boma).

♂. Expanse 46–50 mm. F.-w. Costa, hind margin, basal half of 1a, and apical half from end of cell, black. Cell, and areas 1b, and 2 except at margin, and central portion of area 1a, dark brick red. A subapical band of three transparent spots in 6, 5, and 4. Lower side of subcostal somewhat powdered with black, a little black at base of cell, and a short linear black mark at base of area 1b.

TRANS. ENT. SOC. LOND. 1912.—PART I. (JULY) U

H.-w. dark brick red with a black hind margin some 2 mm. broad from apex to nervule 4, and 3 mm. broad thence to anal angle, from which it extends as a narrow black line along inner margin. The black scaling projects inwardly somewhat along the nervules. Base with a considerable black suffusion extending for about half the length of areas 7, 1c, 1b, and 1a, and occupying lower half of cell as far as origin of nervule 2. A number of black spots somewhat obscured basally by the black suffusion, and more easily distinguished on the underside. Ground-colour tending to yellowish along inner margin.

Underside. F.-w. Costa, hind margin, and apical portion beyond transparent spots dull sage green traversed by broadly black nervules and narrow black internervular rays. Lower side of subcostal, area from end of cell to subapical spots, and basal half of area 3 powdered with black. Extreme base of costa black, and a black linear basal mark in cell and 1b.

H.-w. Base and hind-marginal border dull sage green. Central area pink or pale yellow. Nervule ends on margin broadly powdered with black, and between them a series of narrow black internervular rays broadest at their proximal ends and barely reaching the margin. Black spots as follows :— A large spot in 7 near the middle, followed by two graduated smaller spots in 6 and 5, each slightly more distally placed. An irregular black mark on upper part of discocellulars formed of confluent spots. A spot at base of area 2 followed by a larger spot in 1c, another in 1b rather more distally placed, and a third more proximal in 1a. Base of cell and area 9, black. A dot in 8 near precostal. A subbasal, a median, and a distal spot in cell, a basal and a subbasal in 1c. Base of 1b black, followed by a median spot. Base of 1a black followed by a subbasal spot.

Head and thorax black with a few pale dots and marks. Abdomen black with minute lateral yellowish white dots. Claws equal.

♀. Expanse about 60 mm. Wings more rounded than in ♂. Generally paler, duller, and more thinly scaled. F.-w. Subapical transparent spots as in ♂ but larger. H.-w. with somewhat less basal black in area 7, but the black spots less defined and more confluent. Marginal border not continuously black, but having a reddish brown ground-colour and elongated triangular black markings on nervule ends, between which are short, narrow black internervular rays which barely reach margin.

Underside. F.-w. as above but thinly scaled and somewhat glossy. H.-w. with reddish brown base on which the black spots are ill defined and confluent. Central area occupied by a conspicuous broad curved pink band. Marginal border reddish brown marked as in ♂.

Head, thorax, and abdomen with the pale spots rather more conspicuous.

Acraea conradti seems to be a well-defined species of narrow distribution.

In the Vosseler collection at Berlin there is a fine series of 18 ♂ and 5 ♀, taken in German E. Africa. Two examples in the Tring collection are from Nguelo.

108. *ACRAEA BUSCHBECKI*. Pl. XIII, f. 20.

Acraea buschbecki, Dewitz, Ent. Nachr. 15, p. 102, pl. 1, f. 2 (Apr. 1889); Aurivillius, Rhop. Aeth. p. 112 (1898).

= *zaire*, Rogenhofer, Ann. Mus. Wien., 4, p. 551 (Dec. 1889).

CONGO STATE (Quango, Stanley Falls, Luebo, Kassai R.); CAMEROON (Bitjé R., Asokko).

♂. Expanse about 54 mm. F.-w. narrow and elongated. Brownish black. Cell as far as origin of 3, basal two-thirds of area 2, basal three-quarters of 1b, and subbasal portion of 1a, brick red. An oblique subapical series of three elongated contiguous quadrate brick-red spots in 6, 5, and 4, followed by a smaller, more rounded, and isolated spot in 3. Projecting into cell from subcostal, above origin of nervule 2, an outwardly curved blackish brown spot. In area 1a a large subtriangular blackish brown spot, its base on the submedian, and its apex meeting nervule 2 just beyond the origin of the latter. A linear basal black mark in area 2.

H.-w. brick red, yellowish at inner margin and with a slight blackish basal suffusion. A blackish brown hind-marginal border, some 2 mm. wide, its inner edge somewhat edentate on the nervules and rather less so between them. A series of black spots somewhat ill defined and partly confluent.

Underside. F.-w. as above but basal red areas orange ochreous, subapical spots dull ochreous, and the apex and hind margin striated by ochreous internervular marks, each divided by a narrow central dark ray. Costa dull ochreous.

H.-w. dull ochreous with a blackish brown hind-marginal border as on upperside but bearing a series of marginal internervular ochreous spots each of which is divided by a short internervular ray which scarcely reaches the margin. Black

spots as follows :—One in 7, near middle, followed by two rather smaller spots in 6, and 5, each rather more distally placed. Two spots on upper part of discocellulars (usually confluent) a spot at extreme base of area 4, a dot at base of 3, a large spot at base of 2, followed in area 1c by a large figure of eight mark formed by two coalescing spots. Beneath this, two spots in 1b, and, more proximally placed, two in 1a. A spot in 8 rather beyond precostal, three in cell, the second large and lying beyond origin of nervule 2. Some black at base of 9, cell, 1c, 1b, and 1a. Head, thorax, and abdomen black, with ochreous marks and segmental dots. Claws unequal.

♀. Resembles ♂ but the subapical red spots are rather larger.

I have seen but few examples of this apparently rare species. It is quite peculiar in appearance and easily recognised.

109. *ACRAEA SERVONA*. Pl. XIII, f. 22.

Acraea servona, Godart, Enc. Méth., 9, p. 239 (♀), (1819); Grimshaw, Trans. R. Soc. Edin., 39 (1897), p. 4 (1898); Aurivillius, Ent. Tidskr., p. 94 (1904).

= *lycoides*, Boisduval, Spec. Gen., 1, pl. 11, f. 5 (♀), (1836).

= *circeis* var. *lycoides*, Aurivillius, Rhop. Aeth., p. 114 (1898).

= *dejana* (♂), Godman and Salvin, Hist. Relief Exp., p. 431 (1890); Grose-Smith (*circeis* var.), Proc. Zool. Soc., p. 466 (1890); Em. M. B. Sharpe (*ntebiae*),* Ann. Nat. Hist. (6) 19, p. 581 (1897); Grimshaw, Trans. R. Soc. Edin., 39 (1897), p. 4 (1898).

GABOON (L. Asebbe, L. Asingo, Abanga R.); CAMEROON (Ja R.); CONGO (Ituri R., Kassai R., Aruwimi, Bopoto, Ft. Beni, Leopoldville); ANGOLA (Pungo Andongo).

A. servona subsp. *orientis*.

Aurivillius, Ent. Tidskr., p. 94 (1904).

GERMAN E. AFRICA (Ukani).

f. *depunctella*, Strand, Int. Ent. Zeit. (Guben), 41, p. 221 (1911).

GERMAN E. AFRICA (Amani).

* Miss Sharpe's description of this form does not enable me to distinguish it from the usual Eastern examples. The most remarkable feature of the description is the alleged pale ochreous colour of the h.-w. underside. I have examined a very large number of examples from Entebbe and have never seen one which did not exhibit the chestnut brown colour described under the subspecies *rhodina*. After a most diligent search, assisted by Miss Sharpe herself, I have failed to discover the type of this form, and I am therefore unable to obtain any further information concerning it.

f. unipunctella, Strand, *l. c.*

GERMAN E. AFRICA (Amani, Bomole, Herue, Dar-es-Salaam, Ukami).

f. semipunctella, Strand (*l. c.*).

GERMAN E. AFRICA (Derema).

f. transiendae, Strand (*l. c.*).

GERMAN E. AFRICA (? Derema).

A. servona subsp. *rhodina*.

= *circeis rhodina*, Rothschild and Jordan, Novit. Zool.,
xii, p. 184 (1905).

= *circeis* v. *subochreatea*.

Grünberg, Sitzb. Gesellschaft. naturf. Fr., p. 164 (1910).

UGANDA (Entebbe, Kampala, Mumias); ABYSSINIA (Banka Malo, Gamitscha to Anderatcha).

A. servona ♀ *f. rubra*, f. n.

ANGOLA (Pungo Andongo); GABOON (Fernan Vaz).

A. servona subsp. *limonata*, subsp. n. (♂).

FERNANDO PO.

A. servona tenebrosa, subsp. n. (♂).

GERMAN E. AFRICA (Kwidgwi I., L. Kiwu).

A. servona f. reversa, f. nov.

CONGO (Bopoto, Ituri Forest, Stanley Pool, Kassai).

A. servona servona.

♂. Expanse 42–60 mm. F.-w. elongate and resembling in shape that of *parrhasia*. Sepia black to black. Basal two-thirds of cell, area 1b, and base of area 2, rather thinly and irregularly scaled. Beyond cell three elongate transparent spots separated by nervules 5 and 6, and proximally somewhat powdered with black. Beneath these, in basal part of area 3, a smaller, elongate, partially transparent spot. In area 2 a large, and beneath it in 1b a smaller transparent patch, the latter traversed by a blackish internervular ray. These transparent areas, when viewed by reflected light, are seen to be very sparsely dusted with white scales.

H.-w. At base, and from costa to nervule 7 sepia black, a hind-marginal border of the same colour some 4–5 mm. wide. Central area occupied by a lemon ochreous patch somewhat edentate basally in cell, its outer edge angulated at nervule 3.

Underside. F.-w. costa, apical area and hind margin dusky lemon ochreous, striated by black nervules and rays. The hind-marginal ochreous almost obliterated towards the hind-angle by a suffusion of brownish black. A black spot at base of costa,

remainder of wing almost devoid of scales, except the median nervure and the basal portions of its branches which have a narrow but very dense lateral clothing of large ochreous scales.

H.-w. Those areas which on the upperside are black, are here dusky lemon ochreous. The hind-marginal border regularly striated by black nervule ends and rays, the latter reaching the margin. Black spots somewhat variable, but usually as follows:—One at base in 9, one in 8 against precostal, two rather close together in 7, two in cell, the second over the origin of nervule 2. A basal, a subbasal, and a median in 1c. A basal streak and two median spots in 1b, and two in 1a.

Head black with a yellowish white dot between the eyes, and two on collar. Thorax black with pale dorsal and lateral marks. Abdomen black above with pale lemon ochreous lateral dots. Claws equal (but see f. *reversa*, p. 296).

♀. Expanse 62–66 mm. F.-w. much more rounded, and dark areas usually tending to a browner shade. The transparent patches are more clearly defined, those parts which in the ♂ are thinly scaled, are here of the same depth as the general ground-colour. The yellow patch in h.-w. is often of a duller ochreous. In other respects the ♀ resembles the ♂.

A. servona orientis, subsp. Pl. III, f. 5 (♀).

Ground-colour a much richer black. The f.-w. transparent spots rather smaller, more clearly defined, and more obviously scaled with white. Those in 1b and 3 almost or quite absent. In the h.-w. the yellow area is broader owing to the greatly decreased extent of the basal black. On the underside the f.-w. is correspondingly blacker, though the cell, transparent patches, and bases of areas 6–1b are still almost devoid of scales. The ♀ also has the ground-colour blacker, though scarcely so black as in the ♂.

The black spots of the h.-w. underside seem to be more variable in this race than in most of the more western examples, and Dr. Strand has proposed form names for the principal variations of this feature.* These forms are as follows—

f. *depunctella*.

No black spots in cell, one to two in area 7.

* I am not sure that the naming of forms on the variation of the black spots is not carrying nomenclature to excess. There are species of *Acraea* in which the number of black spots is so variable that almost as many names might be made as there are spots on the insects. In the present species the spots are not even constant in both wings of the same specimen.

f. unipunctella.

One spot in cell and two in area 7.

f. semipunctella.

One spot in cell, one in area 7.

f. transienda.

One spot in cell, one in 7, the transparent spots in areas 1b and 3 of f.-w. present.

A. servona rhodina, subsp. Pl. III, f. 4 (♂).

This form was originally described as *circeis rhodina* by Messrs. Rothschild and Jordan and differs from typical examples in having the yellow areas of the underside replaced by chestnut brown. The type was described from Abyssinia but the subspecies is not confined to that area, since all the examples I have seen from Entebbe and extending as far as Mumias (Tiriki Hills) have this brown colour well developed.

A. servona ♀ *f. rubra*. Pl. III, f. 9.

Three examples of the insect I have figured occur in the Tring collection, and I feel bound to refer them to *A. servona*. Two were taken at Fernan Vaz (Gaboön) in company with several red and black forms, which latter were undoubtedly *A. peneleos*. It is certainly not a ♀ form of the latter. In the specimen figured the h.-w. black spots are large and confluent. They are also rather more numerous than in average examples of *servona*, but fortunately the second specimen already referred to supplies an intermediate in which these spots are quite as in typical *servona*. The third example was taken at Pundo Andongo in Angola. It differs from the others in having a narrower and inwardly less well-defined marginal band in the h.-w. The underside is more orange ochreous, and the h.-w. nervule ends are less broadly black. The central area of the h.-w. underside is pale ochreous.

A. servona limonata, subsp.

This form occurs at Fernando Po, a small series in the British Museum from the Hewitson collection being at present labelled *A. lycoides*. Five examples of the same form are in the Joicey collection (lately the property of Mr. H. Grose-Smith) and these are somewhat vaguely labelled Angola. All differ from typical *servona* in having the spots in f.-w. 1b and 2 lemon ochreous instead of transparent white, and all are ♂ ♂. For some time I was unable to decide whether this form were the true *lycoides*, but M. Charles Oberthür has kindly sent me a most careful description of Boisduval's type. This example is a ♀ and evidently agrees with Godart's *servona*. In the

explanation of Boisdual's plates the locality is vaguely given as "Guinea," and there appears to be no reference to it in the text. Godart gives Angola as the locality of his *A. servona*. The type of this is also a ♀. Now I am unable to say whether the ♀♀ of the Fernando Po form have transparent or yellow spots on the f.-w., as I have seen no ♀ examples from that locality. I cannot therefore definitely connect the Fernando Po specimens with the types of either *lycoides* or *servona*. The fact that yellow spotted ♂♂ occur in the Grose-Smith collection labelled "Angola" would support the conclusion that they were the ♂♂ of Godart's *servona*. If this were established our synonymy would have to be slightly altered. *Servona* would still remain the name of the species, but it would refer to the yellow spotted form, and the ♂ (*dejana*) and ♀ (*lycoides*) would form a subspecies. I have however reason to suppose that the labels referred to are not sufficiently reliable, and until further material is available for the study of these forms, I must regard *servona* and *lycoides* as synonyms, giving a distinctive name to the distinctly yellow spotted form, of which I have at present seen only male examples.

A. servona tenebrosa, subsp. n.

This form, of which I have only seen the ♂, differs from other forms in the following particulars:—The ground-colour is intensely black. There are no clear spots in f.-w. 1b, and 3. The remaining clear spots are reduced in size and quite appreciably scaled with white. The h.-w. pale yellow patch is much reduced, only just extending into area 7, and partially into 1b. On the underside those areas which in the typical form are pale yellow are here of a very dark red brown. It occurs on Kwidgi Island, L. Kivu.

A. servona f. reversa.

This form differs constantly from *servona servona* solely in the fact that the tarsal claws of the male are unequal. It should however be noted that in all the eight examples known to me the transparent spot in f.-w. area 3 is larger and better defined than in the majority of examples of *servona servona*. Also there is a general tendency for the nervule ends on the underside to be more heavily scaled with black brown. In one example this scaling is developed to such an extent that the outer half of the wing is almost completely black, an extreme condition which I have not observed in the type form.

A. servona occurs from Fernando Po to Angola and across the Congo State to Entebbe, thence northwards

into Abyssinia, and southwards into German E. Africa. I have not yet found the dividing line between the typical form and the subspecies *rhodina*, nor between the latter and the subspecies *orientis*. The species does not occur in Neave's collections from N. Rhodesia and Katanga, nor have I seen examples from E. of the Kikuyu Escarpment. It would appear, therefore, to extend into German E. Africa by way of the Urundi Country. It is remarkable that at L. Kivu the subspecies *tenebrosa* represents a form which, in the absence of clear spots in f.-w. 1b and 3, agrees with the German E. African form *orientis*, whilst in the dark red brown areas of the underside it shows affinity with the subspecies *rhodina*. The much-reduced yellow patch of the h.-w. separates it from either form.

The occurrence of the form which I have named *reversa*, adds one more to the many difficulties of classification which the genus *Acraea* presents. An examination of hundreds of typical *servona* together with the few available specimens of *reversa*, reveals no constant difference which would serve as a basis for specific distinction, with the sole exception of the structure of the male tarsal claws. In the other species of the genus these claws are constantly either equal or unequal, but in this one case their structure appears to be inconstant. The genitalia are as closely alike as possible, within the limits of individual variation. I have retained this form *reversa* under the heading of *servona* since there seems no sufficient evidence of specific difference. Moreover, to separate it would at once raise still greater difficulties. The type of *servona* is a ♀. Amongst the examples before me are many ♀♀ which are certainly *servona*. Assuming *servona servona* and *servona reversa* to be different species, to which species do all these ♀♀ belong? Breeding experiments and the acquisition of further material may one day throw some light on the matter. Meanwhile I prefer merely to record the fact that there occur amongst large series of male *servona*, certain examples differing from the rest only in the structure of the tarsal claws. I have not yet discovered any means of deciding whether such forms are or are not specifically distinct.

110. *ACRAEA CIRCEIS*. Pl. XIII, f. 23.

Acraea circeis, Drury, Ill. Exot. Ins., 3, p. 24, pl. 18, f. 5, 6 (1782); Herbst, Naturs. Schmett., 5, p. 13, pl. 81, f. 6, 7 (1792); Aurivillius, Rhop. Aeth., p. 114 (part), (1898).

= *mandane*, Fabricius, Ent. Syst., 3, 1, p. 183 (1793);
Godart, Enc. Méth., p. 239 (1819).

= *opis*, Herbst, Naturf. Schmett., 6, pl. 136, f. 1, 2 (1793).

S. LEONE; ASHANTI; CAPE COAST CASTLE; GABOON;
N. ANGOLA (Kibokolo).

♂. Expanse 52 mm. F.-w. for the most part transparent, the transparency being caused by reduction in number and width of the scales. Costa, apex, nervures and hind margin more heavily dusted with brownish black. Near base of 2, and in 1b near margin, a few yellowish white scales representing two obsolescent spots.

H.-w. base with a triangular dusky grey area bearing black spots more easily observed on the underside. A central band of very pale lemon ochreous beginning in area 6, its outer edge slightly curved as far as nervule 5, thence traversing the wing parallel to inner edge and reaching the inner margin, where the band is about 4 mm. wide. Remainder of wing dusky grey forming a marginal band which joins the basal grey along costa in 7.

Underside f.-w. as above but without the yellow scaling in 2 and 1b. Costa dusky ochreous with a black spot at base. Main nervures laterally covered with brownish scales.

H.-w. As on upperside but paler, the marginal border having the nervule ends and internervular rays heavily dusted with dull brown, and the intervening spaces powdered with dull ochreous. On the grey basal portion black spots as follows:—One in 9, one in 8, two in 7, sometimes a small dot near base of area 6, one (sometimes two) on discocellulars, two in cell (the second in the middle and large), a basal spot in 1c followed by two large spots often coalescent, two in 1b, and two in 1a. Head and thorax black with a few pale marks, abdomen black above with whitish lateral spots. Claws unequal.

♀. Resembles ♂ but the f.-w. are more rounded, and there is a little yellow scaling in 1b, at base of 2, and at end of cell in f.-w.

Acraea circeis is somewhat rare in collections. At one time I was of opinion that it was a form of *A. servona*, but careful examination of a number of preparations of male genitalia convince me that it must be regarded as distinct. It appears to be an exclusively western species.

111. *ACRAEA OREAS*. Pl. XIII, f. 25.

Acraea oreas, Em. M. B. Sharpe, Proc. Zool. Soc., p. 193, pl. 17, f. 5 (1891); Aurivillius, Rhop. Aeth., p. 114 (1898);

Butler, Proc. Zool. Soc., p. 46 (1902) ; Neave, Novit. Zool., 12, p. 346 (1904).

f. albimaculata, Neave, Novit. Zool., 12, p. 329, 346 (1904).

ANGOLA (Bihé, Lucalla, Benguella); GERMAN E. AFRICA (Mwanza); CONGO (90 km. w. of L. Albert Nyanza); BRITISH E. AFRICA (Mt. Elgon, Nandi, Sotik); UGANDA (Toro, Entebbe).

f. angolanus, Lathy (*A. angolanus*), Trans. Ent. Soc., p. 3, pl. 1, f. 4, 5 (1906).

ANGOLA.

A. oreas oreas.

♂. Expanse 48 to 58 mm. F.-w. much angulated and hind margin markedly convex. Black with large lemon yellow spots.* Of these there is one in cell extending from subcostal to median and lying between origin of 2 and 3. A subapical band of three in 6, 5, and 4, the last somewhat more distally placed, one in 2 not quite touching the median, and beneath it and nearer margin a spot in 1b. Usually a small yellow streak near base of 1b close to median.

H.-w. black with a central lemon yellow patch of peculiar shape. This patch occupies the basal portion of 7, nearly the whole of cell except a small streak on lower side at base, and extends beyond cell slightly into 6, 5, 4, 3, and 2.

Underside. F.-w. Costa dark to pale reddish brown. Yellow spots as on upperside but paler. From base to subapical spots brown-black, base of cell and the edges of median nervure and its branches laterally dusted with large yellowish scales. Apical and hind-marginal borders in some cases also brown-black but more usually reddish brown to brownish ochreous striated by the black nervules and internervular rays.

H.-w. varying from black-brown to reddish ochreous. A central yellow patch as above but paler and usually extending in a narrow suffused streak across areas 1c, and 1b, near their middle. Area 8, a streak on lower side of base of cell, and basal part of 1c, 1b, and 1a more distinctly reddish than remainder of ground-colour. A small black spot in 8, rarely one near base of cell, two in 1c (the second on the inner edge of extension of yellow patch) two in 1b and usually one in 1a. Outer half of wing striated by black nervule ends and internervular rays.

* Miss Sharpe's figure shows yellow spots in f.-w., whilst her description states that they are white. I have, however, examined the type in the Jackson collection, and it has yellow spots agreeing with the figure.

Head black with a few whitish marks, thorax black with two anterior dorsal whitish streaks. Abdomen black above with pale yellowish segmental lines and lateral spots. Claws equal.

♀. Expanse 50-60 mm. Resembles the ♂ but f.-w. less angulated.

f. albimaculata

Differs from typical examples in having the spots of f.-w. white. At present I have only seen ♂ ♂ of this form though ♀ ♀ probably also occur.

f. angolanus.

Differs from the typical or eastern form in being larger (♂ 60 mm. ♀ 68 mm.). The f.-w. spots are white, in both sexes the ground-colour of the marginal borders in both wings on underside is generally, though not invariably, pale greyish ochreous. On h.-w. underside areas 8, 9, a streak on lower side of base of cell, areas 1c, 1b, and 1a remain reddish as in typical specimens.

Lathy describes an aberration of the ♀ in which the f.-w. spots are tinged with pale yellow and the h.-w. patch is radiated into the marginal black. This would appear to be a not uncommon form, examples agreeing with Lathy's figure occur both in the Tring Museum and in my own collection.

I do not think the differences between the Angola and other forms warrant the separation of the former as a subspecies. The f.-w. white spots do not distinguish it from the *albimaculata* form, and they are not constant as shown by the ♀ aberration above described. The pale colour of the wing borders on the underside though predominant, is also not quite constant. The variation of this marginal colour is peculiar. In Angola it is, as stated, usually dusky ochreous. Passing eastwards it gradually becomes darker, and at Toro and on to the Tiriki Hills it is deep red brown or black. In German East African examples it again becomes paler turning to a rusty red or orange ochreous. The species is easily recognised by the angulated wings and by the peculiar shape of the yellow central patch of the h.-w.

112. *ACRAEA SEMIVITREA*. Pl. XIII, f. 26.

*Acraea semivitre*a, Aurivillius, Ent. Tidskr., 16, p. 111 (1895);
Rhop. Aeth., p. 114, pl. 1, f. 2 (1898).

= *pervia*. E. M. B. Sharpe, Ann. Nat. Hist. (6), 19, p. 581 (1897); Neave, Novit. Zool., 11, p. 346 (1904).

CONGO (Lualuaburg, Yakusu, Ituri Forest); UGANDA (Entebbe, Port Alice); BRITISH E. AFRICA.

♂. Expanse 54–62 mm. F.-w. transparent, elongated. Costa and nervures narrowly black, apex narrowly black, continuing as a narrow hind-marginal border expanded into triangular marks at nervule ends. A little black at base most extensive in area 1a. The transparency of the wing is caused by a total absence of scales, there being no sign even of scale sockets in the glass-like membrane.

H.-w. brown black at base nearly to end of cell, obscuring some rather large black spots. A black hind-marginal border narrow at apex, about 2 mm. wide as far as nervule 3, afterwards widening out to about 5 mm. at 2. An inner-marginal pale ochreous patch extending partially into area 2.

Underside f.-w. black portions replaced by pale ochreous striated by black nervule ends and rays, the black powdering of which gradually obliterates the yellow towards the hind angle. Some black at base of area 1b.

In h.-w. the area which is occupied above by the basal black and the inner marginal patch, is here entirely lemon ochreous, the hind-marginal border being of a darker shade of the same colour traversed by black nervule ends and rays. Black spots somewhat variable as follows:—One at base in area 9, one (sometimes two) in area 7, one on discocellular at origin of 6 and 7, three in cell, the first on subbasal sometimes absent, and the others often confluent. A spot at base of 2, a basal and two more distally placed spots in 1c (the latter often confluent), two spots in 1b (sometimes confluent) and two in 1a.

Head black with a pale yellow spot between eyes and two on collar. Thorax black with a few paler marks. Abdomen black above with lemon ochreous lateral spots and faint segmental lines. Claws equal.

♀. Expanse 60–72 mm. Resembles ♂ but dark areas rather browner, and the h.-w. inner marginal patch creamy white. In one example before me this patch is reduced to a mere dusting of whitish scales. On the underside the yellow is correspondingly paler and duller.

This species is quite unlike any other *Acraea*, and is easily recognised. The type in the Brussels Museum was taken at Lualuaburg in the Southern Congo. A long

series of examples in the Oxford collection are from Entebbe and Kisumu. It doubtless occurs in the intermediate region, and I find no marked difference between the Congo examples and those from Uganda. I have inspected the type of Miss Sharpe's *A. pervia*, and find it does not differ from other Uganda specimens now before me.

GROUP XVIII.

113. *ACRAEA IGOLA*. Pl. XV, f. 6.

Acraea igola, Trimen, S. Af. Butt., 3, p. 379 (1889); Smith and Kirby, Rhop. Exot., 21, *Acraea*, p. 12, pl. 4, f. 5 (1892); Aurivillius, Rhop. Aeth., p. 112 (1898).

= *cerasa*, Smith and Kirby, l. c., f. 2 (non f. 1) (1892).

= *obeira*, Trimen, Proc. Zool. Soc., p. 23 (1894).

♀. f. *maculiventris*, Smith and Kirby, Rhop. Exot., 29, *Acraea*, p. 16, pl. 5, f. 4, 5 (1894).

= *obeira*, ♀, Trimen, Trans. Ent. Soc., p. 172 (1891).

ZULULAND (Etshowe); RHODESIA (Chirinda); MANIC-
LAND (Christmas Pass); NATAL (Malvern, Durban); GERMAN
E. AFRICA (Amani, Usambara)

A. igola.

♂. Expanse 44-50 mm. F.-w. costa, apex, and hind margin black, broadest at apex. Basal portion almost to end of cell, proximal half of area 2, and the whole of areas 1a and 1b, except at hind margin, rather thinly scaled with brick red, remainder of wing almost transparent crossed by black scaled nervules, and slightly dusted with black scales which are much reduced in width. A black basal linear mark between median and submedian, and another in area 1a. The hind-marginal black is somewhat indented between the nervules by the transparent area. H.-w. brick red with a black hind-marginal border projecting inwardly on the nervules, and to a less extent between them. A greyish black basal suffusion widest in 1c. The inner margin yellowish. Black spots as on underside but somewhat less pronounced especially those in areas 3, 4, 5, and 6.

Underside, f.-w. very thinly scaled and having a glazed appearance, in some examples iridescent. The black areas replaced by reddish brown, and the red portions showing through from upperside.

H.-w. dull reddish, the marginal border brown crossed by black nervule ends and brown internervular streaks, the latter

short and scarcely reaching the margin. Basal suffusion as above but dark greenish grey. Black spots as follows:—An outer or discal series of eight, the first, in 7, large, the second, third, and fourth, decreasing in size, and lying almost parallel to the hind margin, though the fourth, a minute spot not always present, is rather less distally placed. The fifth, in 3, small and close to end of cell, the sixth, seventh, and eighth large and nearly in a straight line almost at right angles to inner margin. Two spots on the discocellulars, a large sub-basal in 7, two in cell, the second just before origin of 2, in 1c a basal and a subbasal, and beneath the latter a spot in 1b. A subbasal in 1a, and sometimes a very small additional spot in the same area. Some basal black in area 9, and a dot in 8 close to precostal.

Head, thorax, and abdomen black with a few very small yellowish spots. Claws equal.

♀. Expanse 50–54 mm. Markings as in ♂ but wings more rounded and red areas replaced by very pale ochreous or creamy white, and the black margins are suffused and thinly scaled. In some examples there is an indication of reddish internervular marks on the h.-w. marginal border. The subbasal spot in h.-w. cell is sometimes absent.

A. igola ♀ f. *maculiventris*.

The ♀ *igola* is dimorphic and judging from a long series before me the present form named *A. maculiventris* by Grose-Smith, would appear to be commoner than the whitish form described by Trimen as the type. The present form resembles the ♂ but the red areas are duller and paler, whilst the h.-w. hind-marginal border is invaded by the red ground-colour to a varying extent. In most cases the h.-w. underside presents a remarkable difference from that of the ♂. The marginal border is reddish brown and well developed, whilst the basal portion is chocolate brown extending to the discal row of spots. Between these and the marginal border is a broad, curved discal band of a dull pinkish colour. The general effect of this pattern is to give the underside a marked resemblance to that of *A. conradti*.

In the Vosseler collection at Berlin I found a very fine series of *A. igola* from Amani and Usambara in German E. Africa. The ♂♂ have the black spots of the upperside very distinct. On the underside the f.-w. is very iridescent, whilst the h.w. has a tendency to be yellowish rather than

red. Some ♂ examples have all the scaling much reduced, the h.-w. marginal border being almost absent. The ♀♀ are of the *maculiventris* form, and one example before me has no black border in the h.-w. On the underside the discal curved band is pink, due to a sprinkling of whitish scales on a brownish ground. The hind-marginal border is orange brown.

114. *ACRAEA AUBYNII*. Pl. V, f. 6 (♂). Pl. XV, f. 9.

Acraea aubyni, sp. nov.

BRITISH E. AFRICA (Mwaeba Hill, 35 m. N.N.W. of Rabai).

♂. Expanse 50-56 mm. F.-w. elongated and with hind margin slightly concave. Cell, basal two-thirds of area 3, greater part of areas 2, and 1b, and a streak beyond middle of 1a, pale brick red. Costa, apex, a short space beyond cell, and greater part of 1a, sepia. A short blackish basal streak in area 1b. A subapical patch of three more or less transparent elongated spots in 6, 5, and 4. H.-w. basal half of 7, and 1c, base of cell, most of 1b, and all of 1a sepia. A sepia black marginal border 1.5 to 2.5 mm. broad, slightly edentate inwardly on and between the nervules. Remainder of wing pale brick red with black spots more easily observed beneath.

Underside. F.-w. very sparsely scaled except at apex and hind margin. Nervures and nervules finely black. Resembles upperside but all the sepia areas dull ochreous and there is an indication of a small blackish streak in cell. H.-w. dull ochreous, those areas which are sepia above being represented by a slightly darker ochreous shade. Hind margin bears short internervular rays which barely reach the margin or only do so in a fine point. Nervule ends on margin slightly thickened with black brown. Black spots as follows:—Two in 7, the second just beyond origin of nervule 7. Beneath the second and rather more distal a spot in 6, followed by one still more distal in 5. A spot at base of 5 on discocellular and a similar but smaller one at base of 4. One at base of 2, a basal, a sub-basal and a distal in 1c and 1b, the two outer spots in latter area being rather further from base than the corresponding ones in 1c. A subbasal in 1a.

Head black with a yellowish spot between the eyes and two on collar. Thorax black. Abdomen black above with yellowish lateral spots. Claws equal.

♀. Expanse 60 mm. F.-w. for the most part transparent. Costa dusted with blackish. Apex rather broadly blackish as far as area 4 where the dark scales become confined to a

narrow hind-marginal border fading into reddish in areas 1b and 1a. A slight dusting of dark scales on the discocellulars and beyond the cell, and a very small dark spot in cell, close to subcostal above the origin of nervule 2. Base slightly blackened and the whole of cell, and the greater part of 2, 1b and 1a faintly powdered with red. H.-w. blackish at base, and having a dark hind-marginal border as in ♂. Remainder of wing brick red but very thinly scaled. Black spots as in ♂ but those in 7, 6 and 5 beyond cell more distinct. Underside f.-w. as above but almost devoid of scales except at apex and hind margin where it is brownish ochreous. H.-w. base and marginal border brownish ochreous. Ends of nervules black with short dark internervular rays which do not reach margin. Central area sparsely scaled with whitish to which a pink tinge is transmitted from the red scales of the upperside.

This species is represented by a few examples kindly presented to the Oxford collection by the Rev. K. St. A. Rogers. It adds one more form to a very difficult group, the true affinities of which are very obscure. A single ♀ example has just been received. The species is apparently very closely allied to *igola*, but the h.-w. spots in 7, 6, and 5 are much nearer the cell than in that species. I have much pleasure in dedicating it to the Rev. K. St. Aubyn Rogers, to whose skill and generosity the Oxford collection owes so many valuable accessions.

115. *ACRAEA ORESTIA*. Pl. XV, f. 10.

Acraea orestia, Hewitson, Ent. Mo. Mag. 11, p. 131 (1874);
Exot. Butt. *Acraea*, pl. 7, f. 47 (1875); Snellen, Tijdschr.
v. Ent. 25, p. 217 (1882); Aurivillius, Ent. Tidskr., 14,
p. 273 (1893); Rhop. Aeth., p. 112 (1898); Lathy, Trans.
Ent. Soc., p. 186 (1903).

= *orestina*, Plötz, Stett. Ent. Zeit., 41, p. 190 (1880):

= *iturina*, Neave, Novit. Zool., xi, p. 346 (1904).

NIGERIA; FERNANDO PO; GABOON; CAMEROON; ANGOLA;
CONGO (Bangala); UGANDA (Entebbe, Damba I.); BRITISH E.
AFRICA (Tiriki Hills).

f. *humilis*, Em. M. B. Sharpe (*A. humilis*), Ann. Nat. Hist. (6)
19, p. 582 (1897); Aurivillius, Rhop. Aeth., p. 86 (1898);
Smith & Kirby, Rhop. Exot. *Acraea*, 7, p. 23, pl. 7, f. 3
(1901).

BRITISH E. AFRICA (Tiriki Hills); UGANDA (Entebbe,
Damba I.).

TRANS. ENT. SOC. LOND. 1912—PART I. (JULY) X

f. transitia, f. nov.

= *humilis* ♂, Smith & Kirby, Rhop. Exot. *Acraea*, 7, p. 23, pl. 7, f. 1, 2 (1901).

BRITISH E. AFRICA (Tiriki Hills); UGANDA (Entebbe, Damba I.).

A. orestia orestia.

♂. Expanse 38–40 mm. F.-w. transparent and highly iridescent, the scales much reduced in width. Base, costa, apex, and hind margin suffused with blackish. In some examples, as in those mentioned by Aurivillius (*l.c.*) from Bonge, Cameroon, as also in some from Agberi on the Niger, now before me, the black is of much less extent than in Hewitson's figure and the base of 1a, 1b, 2, and part of cell are flushed with red. The h.-w. is red with a little dusky suffusion at base and a blackish hind-marginal border 2–2.5 mm. wide rather noticeably darker near the anal angle. Numerous black spots often, as in the type, with a tendency to elongation. These are somewhat more distinct especially at base, on underside.

Underside. F.-w. like the upperside but very sparsely scaled and vitreous. Costa brownish yellow with a black spot at base.

H.-w. very thinly scaled and paler than above except for the black spots which are prominent, and often somewhat confluent. Of these there are, one in 8, two in 7 the outer one forming the first of a curved discal band of 5, in 7, 6, 5, 4, and 3 lying parallel to apical margin. One or two very small spots on discocellulars. A spot at base of area 2 followed by one in 1c and 1b, that in 1c being slightly nearer base. A subbasal and a central spot in cell, a subbasal in 1c and 1a, and a central spot in 1b. Ends of nervules blackish, and short blackish internervular rays.

Head and thorax black with a few pale spots. Abdomen black above with white segmental lines and lateral spots. Claws unequal.

♀. Expanse 44 mm. Like the ♂ but with more rounded wings and altogether paler. H.-w. underside has the reddish areas pinkish ochreous with some greyish ochreous near inner margin.

A. orestia f. humilis.

♂. Expanse about 38 mm. Wings transparent owing to reduction in width of scales and in some places to hairs. No red or yellow scales. F.-w. dusted with blackish brown at base, costa, apex, and slightly on hind margin. H.-w.

irregularly blackish at base, extending into cell and below median, with slight blackish scaling at anal angle. Thorax black, with pale spots, abdomen black above, yellowish beneath, and bearing small white lateral segmental spots.

♀ resembles ♂.

f. *transita*.

This form has the typical basal red of the f.-w. replaced by a black suffusion and the h.-w. red is replaced by white, yellow or orange. It is liable to occur in both sexes.

Almost every grade of intermediate may occur between the forms above described. Some time after I had decided that Miss Sharpe's *A. humilis* was a form of Hewitson's *orestia* a series of specimens was received at Oxford from Dr. G. D. H. Carpenter, who had bred them on Damba I. These contain both the typical red and the f. *transita*, and taken in conjunction with another series captured in the Tiriki Hills by Dr. C. A. Wiggins, containing all three forms, fully confirm my conclusion. The larva is described by Dr. Carpenter as having been mistaken by him for that of *A. alciope*,* from which I gather that the resemblance is extremely close.

116. *ACRAEA CINEREA*. Pl. XV, f. 8.

Acraea cinerea, Neave, Novit. Zool., xi, p. 325, pl. 1, f. 16 (1904).

BRITISH E. AFRICA (Tiriki Hills, 5,000 ft.)

A. cinerea alberta, subsp.

Eltringham, Novit. Zool., xviii, p. 151 (1911).

90 km. W. of L. ALBERT EDWARD, 3,250 ft.

A. cinerea cinerea.

♂. Expanse 40 mm. F.-w. transparent owing to reduction in width of scales (hairs not present). Costa and apical region finely dusted with blackish scales. H.-w. evenly and fairly thickly clothed with blackish scales.

Underside f.-w. almost devoid of scales, deep red at base of costa. H.-w. thinly scaled and having deep red basal patch extending along lower half of cell nearly to end and inwardly to inner margin. A few minute and obsolescent black spots on margin of red area in 1b, 1c, and 2, and on upper discocellular, one spot in middle of cell, one near base in 1b, and two or three against the body at base. Marginal internervular folds distinct. Thorax and abdomen black above, brownish beneath. Abdomen with pale lateral segmental spots. Claws equal.

* See Pl. VI, f. 10.

♀. Expanse 45 mm. Resembles ♂ but margin of h.-w. rather less thickly scaled. Spots on underside rather more distinct and visible on upperside. A second spot in cell nearer base.

A. cinerea alberta. Pl. IV, f. 1 (♂).

♂. Expanse 45–50 mm. F.-w. as in *cinerea* but costal and apical scaling sooty black. H.-w. sooty black with a large central patch of crimson occupying base of 7, 6, 5, 4, 3, 2, middle of 1c, and end of cell.

Underside as in *cinerea* but the crimson area appears as a deep pink. Basal dark red as in *cinerea*. One example has no black spots on underside of h.-w.

♀ unknown.

A. cinerea occurs in the Tiriki Hills, N. of Kisumu at an elevation of over 5,000 ft.

The examples of *cinerea alberta* were taken some sixty miles W. of L. Albert Nyanza at an elevation of about 3,250 ft.

There is no difficulty in recognising this species as it is quite unlike any other African *Acraea*. The male armature is of a very simple though fairly distinctive character.

117. *ACRAEA QUIRINALIS*. Pl. XV, f. 7.

Acraea quirinalis, Grose-Smith, Novit. Zool., vii, p. 544 (1900); Rhop. Exot. *Acraea*, 7, p. 24, pl. 7, f. 5 (1901).

GERMAN E. AFRICA (Usukuma); BRITISH E. AFRICA (Kisumu, Nandi); UGANDA (Entebbe); CONGO (Ituri Forest).

♂. Expanse 40–50 mm. F.-w. rather elongated, greyish, almost transparent (scales almost reduced to hairs). Base nearly to end of cell, base of area 2, and greater part of areas 1b and 1a flushed with red. Costa, apex and hind margin faintly darker than the remainder. At base of area 1b a well-marked black longitudinal streak, and in cell along the subcostal a well-developed black streak extending to a point above the origin of nervule 2.

H.-w. also thinly scaled, a little black at base, followed by a well-defined red patch which extends a little beyond the end of cell leaving a broad greyish semitransparent marginal border. This border is almost twice the width of that in the red form of *orestia humilis* and is not, or only very faintly, darker at anal angle. Black spots less distinct than on underside.

Underside f.-w. almost scaleless. H.-w. also nearly scaleless except the black spots which are arranged as follows:—One at base in 9, one in 8, two in 7, the second over origin of nervule 7, and forming the first of an outer row of eight. Of these the first five are roughly parallel to the outer margin, the sixth

near base of area 2, the seventh in 1c at the same level, and the eighth in 1b rather more distal. In addition to these there are two spots in cell, the second just before origin of nervule 2; a basal and a subbasal in 1c, an additional spot in 1b, and two in 1a.

Head and thorax black with a few pale dots, abdomen black above with minute whitish lateral dots. Claws equal.

♀. Resembles ♂ but has rather more rounded wings, and the red of f.-w. is of rather less extent. In the h.-w. the red patch is outwardly much less sharply defined being invaded by the greyish dusting of the border both on and between the nervules. The spots in the upper part of the outer row may be absent.

It was some time before I was able to decide the correct nomenclature of *A. quirinalis* and *A. iturina* owing to the fact that the red form of *A. orestia* was nearly always found with them, and all three were mixed together in collections. Indeed of two alleged co-types of *quirinalis* sent to me for examination, one was *quirinalis* and the other the red form of *orestia*, Mr. Grose-Smith having failed to distinguish between them. I have since seen the type of *quirinalis* and find that it is not, as I thought it might be, only the red form of *orestia*. Familiarity with these forms enables them to be easily distinguished without regard to the colour or pattern, since *iturina* has the nervules 6 and 7 of the h.-w. stalked, whilst they arise independently in *quirinalis* and *orestia*, and the tarsal claws of the ♂ *quirinalis* are symmetrical, whilst those of *orestia* are asymmetrical.

Quirinalis occurs from Usukuma to Kisumu and Entebbe, and into the Ituri forest.

118. *ACRAEA FORNAX*. Pl. XV, f. 11.

Acraea fornax, Butler, Ann. Nat. Hist. (5), 4, p. 230 (1879);
Mabille, Nat. Hist. Mad. Lep., 1, p. 106, pl. 9a, ff. 10, 10a
(1885-7); Aurivillius, Rhop. Aeth., p. 103 (1898).

= *smithii*, Mabille, Ann. Ent. Fr. (5), 9, p. 341 (1879).*

MADAGASCAR (Fianarantsoa).

♂. Expanse 50 to 52 mm. F.-w. Basal half bright red extending to end of cell, very slightly into area 3, about half

* Strictly speaking, Mabille's name should stand. His paper was *redd* on Jan. 8th, but not published till Oct. Butler's description was published in Sept. Mabille has himself, however, in the work on Madagascar, adopted the above synonymy.

the length of area 2, and to within about 3 mm. of the margin in 1b and 1a. Costa black with a little red at base. Outer portion of wing black, rather thinly scaled in discal area, and a more or less distinct partially transparent subapical patch formed of three spots in 6, 5, and 4. Nervules black and internervular black spurs along margin. A linear black mark at base of 1b. Sometimes a black spot in the proximal half of 2, and another in 1b nearer margin.

H.-w. bright red with a black hind-marginal border about 3 mm. wide having a somewhat irregular inner outline, being indented by the red ground-colour between the nervules especially in 3, 2, and 1c. Traces of red submarginal spots in 2 and 1c. Black spots corresponding with those on underside.

Underside f.-w. a pale replica of the upper with the addition of a black spot at base of costa and a marginal row of triangular brownish red internervular marks edged with black.

H.-w. Base pale pink followed by a dusting of madder brown scales, outside this a pale pink curved median band from costa to inner margin. Marginal band madder brown 2-3 mm. wide. A series of deep orange triangular marginal spots, their bases on the margin, and each enclosed in a black triangle the apex of which is produced in 4, 3, 2, and 1c into a short internervular ray. Black spots large. Three discal spots in 7, 6, and 5 parallel to apical margin. A large composite spot formed of one on discocellulars and one at base of areas 6, 5, and 4. A spot at base of 3 and of 2, the latter followed by a spot in 1c and 1b, all in a straight line at right angles to inner margin. A spot in 8 against precostal, one at base and one in middle of cell, a subbasal in 1c, one in 1b, and two in 1a. Some irregular black at base of wing.

Head black with a pale mark between the eyes, and two reddish tufts on collar. Thorax black with one or two minute pale spots. Abdomen black above with reddish lateral spots. Claws unequal.

♀. Expanse about 58 mm. Upperside like that of the ♂ but rather more thinly scaled, and the red colour paler and duller. The black spots of h.-w. show a tendency to elongation and the h.-w. black hind-marginal border is nearly twice as broad as in the ♂.

Underside much paler and duller than that in ♂ especially on the h.-w. hind-marginal border, the characteristic pattern of which is merely indicated. One ♀ in the Staudinger collection has the red areas replaced by white and the trans-

parent part of f.-w. apical area much larger than in ♂. The underside is also whitish without any trace of the reddish marginal spots on either wing.

The species would appear to be rare. It occurs only in Madagascar.

119. *ACRAEA STRATTIPOCLES*. Pl. XV, f. 13.

Acraea strattipocles, Oberthür, *Etud. d'Ent.*, 17, p. 18, pl. 1, f. 9, pl. 3, f. 25 (1893); Aurivillius, *Rhop. Aeth.*, p. 112 (1898).

MADAGASCAR (Antsianaka, Alaotra).

♂. Expanse 50 to 54 mm. F.-w. Costa, apex, and hind margin black, widest at apex. About two-thirds of length of cell, proximal half of area 2, the whole of area 1b, except at margin, and the distal part of 1a except at margin, deep brick red. Remainder of wing transparent crossed by the black nervules, the transparency somewhat invading the marginal black between the nervules, and caused by a reduction in number but not in size, of the scales. Sometimes a trace of a black spot near base of area 2.

H.-w. deep brick red, yellowish at inner margin, and having a black hind-marginal border, the inner edge of which is fairly regular and not deeply indented by the ground-colour. Numerous large, more or less confluent, black spots more easily distinguished on underside.

Underside f.-w. nearly devoid of scales and very shining, the pattern of upperside showing through. Costa, apex, and hind margin dusted with umber brown, and a black spot at base of costa.

H.-w. pinkish varying from nearly white to dusky pink, more or less suffused with brown in lower half of cell, and basal portion of 3, 2, and 1c. Marginal border russet brown, divided by darker, broadly scaled nervule ends and narrow short internervular rays. Black spots as follows:—An outer or discal row of eight. The first large, in area 7, the second and third (in 6 and 5) rather smaller and respectively rather more distally placed. The fourth slightly more proximal, the fifth and sixth large and occupying the base of areas 3 and 2 respectively. The seventh and eighth large and nearly in a straight line with the sixth, at right angles to inner margin. This row of spots is practically confluent. In addition to these, a basal spot in 9, a dot in 8 near precostal, a large subbasal spot in 7, a smaller spot near base of cell, and a second and larger spot in cell

beyond origin of nervule 2. A basal and a subbasal in 1c, beneath the latter a spot in 1b, and two spots in 1a.

Head black, thorax black with white dots, and reddish tufts on collar. Abdomen black above with white segmental dots and lines. Claws unequal.

♀. Expanse 64-66 mm. Pattern and markings much as in ♂ but the red colour duller and browner, and the black margins browner than in the ♂. The hind-marginal border of h.-w. has its inner edge more softly outlined though it remains fairly regular as in the ♂.

A. strattipocles may be distinguished from *A. masamba* and *A. sambavae* by the more distal position of the second spot in the h.-w. cell.

120. *ACRAEA MASAMBA*. Pl. XV, f. 14.

Acraea masamba, Ward, Ent. Mo. Mag., 9, p. 3 (1872); Af. Lep., p. 10, pl. 7, f. 3 (1874); Saalmüller, Lep. Mad., 1, p. 75, pl. 3, f. 32 (1884); Mabille, Nat. Hist. Mad. Lep., 1, p. 103, pl. 9a, f. 1, 1a, 2 (1885-7); Aurivillius, Rhop. Aeth., p. 112 (1898).

= *rüppelli*, Saalmüller, Ber. Senck. Ges., p. 80 (1878).

MADAGASCAR (Ste. Marie, Fenerive, L. Humblot, Antakares, Tamatave).

f. *silia*, Mabille, Nat. Hist. Mad. Lep., 1, p. 105, pl. 9a, f. 3, 4 (1885-7).

= *masamba*, Ward, Af. Lep., pl. 7, f. 4 (1874).

MADAGASCAR (Antsianaka, L. Alaotra).

♀ f. *boseae*, Saalmüller, Ber. Senck. Ges., p. 259 (1880); Lep. Mad., 1, p. 76, pl. 1, f. 3 (1884); Mabille, Nat. Hist. Mad. Lep., p. 106 (1885-7).

A. masamba masamba.

♂. Expanse 48-56 mm. F.-w. Transparent, owing to a reduction in size and number of the scales. Costa and apex black, and the nervule ends along hind margin expanded into black triangles their bases joined on the margin. About two-thirds of cell, base of area 2, and the greater part of area 1b suffused with bright brick red. Area 1a black with a slight powdering of red in the outer half. In some examples a small black mark in cell, near middle, close to subcostal, occasionally extended into a blackish suffused line running obliquely across cell to near origin of nervule 3. Usually a black linear mark at base of area 1b.

H.-w. bright brick red, usually with a slight black basal suffusion, most extensive in 1c. A black hind-marginal

border 2-3 mm. wide, edentate inwardly on the nervules, thus producing a much more broken inner outline than in *A. strattipocles*. Black spots as on underside. Inner margin yellowish white.

Underside. F.-w., the greater part almost devoid of scales. The red areas showing through from the upperside. The black of upperside reproduced in sepia scales. Both sides of the median nervure, and the basis of nervules 2 and 3 densely clothed with large, ovate, golden ochreous scales. (This feature is not present in *strattipocles*.) Costa with a small black mark at base.

H.-w. pinkish white, the black border of the upperside reproduced in sepia, nervule ends and short fine internervular rays rather darker. Black spots as follows :—An outer row of nine, the first very large in area 7 above origin of nervule 7, the second smaller in 6 and nearer margin, third still smaller in 5 and nearer margin, fourth minute in 4 and further from margin than third (third and fourth sometimes very minute or absent,) fifth of medium size at base of area 3, sixth, about as large as first, at base of area 2, and often somewhat produced outwardly, seventh large, more or less heart-shaped, its inner edge at level of origin of 2, eighth in 1b, rather smaller, and nearer margin, ninth small in 1a nearer base. A spot in 9, one in 8 against precostal, two in cell, the second lying *before origin of nervule 2*, a basal and a subbasal in 1c, a little basal black and a subbasal spot in 1b, and a subbasal in 1a on a level with that in 1c.

Head black with a yellow spot between eyes and two on collar, thorax black above with whitish dorsal and lateral marks, abdomen black above with whitish lateral spots and segmental lines. Claws unequal.

♀. Expanse about 66 mm. Resembles ♂ but f.-w. more rounded, and general colouring paler and duller. On the f.-w. underside there are a few large yellow and orange scales on the median nervure but not so closely packed as in ♂.

A. masamba f. *silia*.

Ward's figures show a red form which is the typical *masamba* and a yellow form (not described in the text) which is really somewhat intermediate between the f. *silia* and f. *boseae* of Saalmüller. The form *silia* resembles the type form except that the red colour is replaced by a rich golden yellow, much paler in the ♀. There seems to be a constant tendency towards absence of the spots in areas 5 and 4 of h.-w.

M. Charles Oberthür, to whom I am indebted for the opportunity of making a careful examination of a series of *masamba*, *silia* and *strattipocles*, asserts, in a letter, his firm opinion that *masamba* and *silia* are distinct species. I regret that I should feel compelled to differ from the view of an eminent collector to whom I owe so much valuable assistance. The sole difference between the two forms is one of colour. Certainly the ground-colour in h.-w. seems, in *silia*, always to be slightly extended outwards in area 4, thus causing an indentation in the black of the marginal border, but the same feature is observable in varying degrees of development in a series of *masamba*. On the other hand, there is in both forms the same heavy yellow scaling of the f.-w. median nervure on the underside, the transparency of the f.-w. is caused in the same manner, and the male armatures are not distinguishable. The alternation of red, yellow, and white is a common phenomenon in other species, and I feel bound therefore to consider *silia* as merely a form of *masamba*.

A. masamba ♀ f. *boseae*.

This is a form in which the red areas are replaced by pale yellowish white, with a perhaps still greater tendency than in f. *silia* to absence of spots in h.-w. areas. So far I have only seen ♀ ♀ of this form, and judging by the analogy of other Madagascan species the white colour is probably confined to that sex. A ♀ of the *silia* form now before me has, in the h.-w., the inner margin, and the space between the marginal border and the spots in areas 1b to 3, almost white.

121. *ACRAEA SAMBAVAE*. Pl. XV, f. 15.

Acraea sambavae, Ward, Ent. Mo. Mag., 10, p. 59 (1873);
 Mabille, Nat. Hist. Mad. Lep., 1, p. 101, pl. 10, f. 7-9
 (1885-7); Aurivillius, Rhop. Aeth., p. 112 (1898).

MADAGASCAR.

♂. Expanse 54-56 mm. F.-w. Costa and apex powdered with black, nervule ends broadly powdered with black on hind margin forming a narrow border with a sinuous inner outline. Cell almost to end, base of area 3, basal half of 2, and the whole of area 1b, except just on margin, powdered with deep brick red. Area 1a black powdered with red. Remainder of wing transparent, due to a reduction in number and not in size of the scales, these being also set somewhat on edge. H.-w. brick red, yellowish in areas 1a, 1b, and 1c, and having a slight black basal suffusion. At extremities of nervules there are

black triangles, their bases contiguous on the margin. Black spots as on underside, but those of outer row rather larger.

Underside. F.-w. for the most part devoid of scales. Dusted with sepia on costa, apex, and along hind margin. H.-w. Base to outer row of spots, and on hind margin, brownish pink, intervening space dull pale pink. Nervule ends on margin blackish brown. Short internervular folds rather distinct but not blackened. Black spots as follows:—An outer row of eight (sometimes nine). The first two in 7 and 6 large, and placed beyond origin of nervule 7, the third and fourth in 5 and 4 smaller, and placed much nearer margin, the fifth at base of area 3, sixth adjacent to it in 2, and the seventh and eighth in 1c, and 1b, in line with the sixth and nearly at right angles to inner margin. Sometimes a ninth spot in area 1a. Some black at base of wing, a spot in 8 against precostal, a large transverse subbasal spot in 7, two in cell, the second lying at or before origin of nervule 2, one or two spots on upper part of discocellulars, a subbasal in 1c and 1a, and more distally placed than these a spot in 1b.

Head black with a reddish dot between the eyes and two on collar, thorax black above with indications of a few pale markings, abdomen black above with dull yellowish lateral spots and intersegmental lines. Claws unequal.

♀. Expanse 60–70 mm. Resembles the male but the red areas are either duller and paler, or may vary to yellowish white.

I have seen but few examples of this species. It may be distinguished from *masamba* by the more distal position of the h.-w. spots in areas 4 and 5, by the much less developed h.-w. marginal border, and by the greater extent of red in the f.-w.

I have no special localities for this purely Madagascan species. Mabille describes the species as rare in that island and as inhabiting the eastern wooded areas. One example in the Oxford collection is labelled S.W. Madagascar.

GROUP XIX.

122. *ACRAEA SAFIE*. Pl. XV, f. 1.

Acræa safie, Felder, Reise Novara Lep., p. 370 (1867); Aurivillius, Rhop. Aeth., p. 114 (1898); Rothschild and Jordan, Novit. Zool., xii, p. 183 (1905).

ABYSSINIA (Gardulla).

A. safie f. *antinorii*, Oberthür (*A. antinorii*), Ann. Mus. Genov., xv, p. 157, pl. 1, f. 3 (1880); xviii, p. 719 (1883); Aurivillius (var. ? *antinorii*), Rhop. Aeth., p. 114 (1898); Pagenstecher (*safie* var. *antinorii*), Jahrb. Nass. Ver. Nat., lv, p. 136 (1902); Roth. and Jord., Novit. Zool. xii, p. 183 (1905).

ABYSSINIA (Gara Daij, Abulcassim, Schoa, Dara R., Malo, Kaffa).

A. safie safie.

♂. Expanse 44–45 mm. F.-w. brown black. Beyond cell a series of four translucent spots, dusted with ochreous. The first very small in area 9, the remainder large, subquadrate, and separated only by nervules 5 and 6. At base of area 2 a large ochre yellow spot, and beneath it in 1b a somewhat larger patch of the same colour.

H.-w. brown black with a central band of ochre yellow, extending from costa almost to inner margin, the portion above nervule 4 being some 2 mm. broader than the remainder.

Underside. F.-w. Central portion greyish brown. Costa, apex, and hind margin pale ochreous, striated by narrowly black nervules and rays. The subapical spots white, those in 2 and 1b as above but paler.

H.-w. pale dusky ochreous, with the central band as above but paler. Hind-marginal border striated by very narrowly darkened nervules and rays. A few very small black spots so variable in number as to be of little use as a character. When two are present in cell, the second is situated before the origin of nervule 2.

Head and thorax black with a few pale markings. Abdomen black above with pale ochreous lateral dots. Claws equal.

♀. I have not seen a ♀ corresponding to this form.

A. safie f. *antinorii*.

This form differs from typical examples principally in having the spots and h.-w. band much reduced. In one example before me there are three small whitish subapical spots, a small ochreous mark at base of area 2, and beneath it a very slight trace of ochreous in 1b. The h.-w. is all brown black with just a few ochreous scales in area 6. A trace of such scales may also be discerned with a lens in areas 7 and 5.

Underside extremely variable. In one example before me it is much as in the type form. In a second the h.-w. is all dull greyish ochreous, slightly darker on the hind-marginal border, whilst in a third the basal portion of h.-w. is dull

ochreous, and the inner portion of the hind-marginal border is dusted with reddish brown, this suffusion reaching the cell in area 3. This example has only three black spots on the underside, viz. two on the discocellulars, and one in 1b.

♀ resembles the ♂.

This species, which is quite distinctive in appearance, appears to occur only in Abyssinia.

123. *ACRAEA AMICITIAE*. Pl. XV, f. 12.

Acraea amicitiae, Heron. Trans. Zool. Soc., 19, p. 148, pl. 5, f. 11 (1909).

MT. RUWENZORI.

♂. Expanse 50–56 mm. F.-w. hind margin rather markedly concave. Base, costa, distal half of wing, hind margin and inner margin brown black. Cell, middle of 2, and greater part of 1b, tawny red. Beyond cell a band of three pale spots separated by nervules 6 and 5, sometimes transparent, sometimes dusted with reddish yellow, and followed by a small separate spot in 3 similarly variable. In cell an irregular black spot wide at subcostal, narrowing suddenly in the middle and reaching median at origin of nervule 2. A black spot at base of 2 distally indented by the red colour, and beneath it a sinuous black spot in 1b. In some examples indications of reddish submarginal dots.

H.-w. tawny-red, base of area 7, upperside of median to end of cell, base of 2, and basal half of 1c, 1b and 1a black. A black submarginal line beginning at costa and proceeding parallel to margin as far as nervule 3 where it suddenly widens out to a broad black submarginal band which reaches inner margin. Between this and the margin the nervule ends are rather broadly black and join a fine black marginal line, thus enclosing large quadrate spots of the ground-colour. A few small black spots corresponding to those beneath.

Underside. F.-w. Costa, apex, and margin dark ochreous crossed by black nervules, and having on margin orange brown internervular rays. Those parts which above are red or black are here almost scaleless, the black marks only showing through from upperside. A black dot at extreme base of costa. A fine black line round margin.

H.-w. Basal and distal part of 7, base of cell, and basal half of 1c, 1b, and 1a pale grey. Middle of 7, end of cell, and bases of 6 and 5, reddish. Beyond cell pale brownish pink, the margin tawny orange, and the black submarginal line

and band of upperside showing slightly through. Nervule ends black joining in a fine black marginal line. Small black spots as follows:—One, minute, in 8 (often absent), two in 7 close together, the second just beyond origin of nervule 7. Beneath this and nearer margin two small spots in 6 and 5. A spot at base of 2, a V-shaped spot in 1c (often divided) and a spot in 1b, these three all in a straight line at right angles to inner margin. One spot in middle of cell and one at extreme end, one on discocellulars at base of nervule 6, and a similar one at base of 5, a basal and a subbasal in 1c, beneath it a spot in 1b, and another in 1a, also a subbasal in the latter area.

Head and thorax black with yellowish dots; abdomen black above with yellowish lateral dots and fine pale segmental lines. Claws unequal.

I have not seen a ♀ of this species.

A. amicitiae is a very distinct and apparently local species. It occurs on Mt. Ruwenzori from 6,000 to 13,000 ft.

124. *ACRAEA ANSORGEI*. Pl. XVI, f. 5 (♀).

Acraea ansorgei, Grose-Smith, Novit. Zool. v, p. 351 (1898);

Aurivillius, Rhop. Aeth., p. 117 (1898); Grose-Smith, Rhop.

Exot. (*Acraea*), 6, p. 21, pl. 6, f. 9, 10 (1901).

BRITISH E. AFRICA (Nandi Station, Limoru).

There are before me four examples of this species, all ♀ ♀. Grose-Smith first described the type as a ♀ and afterwards figured it as a ♂, but his first conclusion was the correct one. His figure is like the insect in pattern only, as it shows the paler areas bright yellow, whereas in the type they are orange tawny.

As no two of the examples before me are alike, I will first describe the typical form, afterwards indicating the points in which the remaining three respectively differ.

♀. Expanse 40–50 mm. F.-w. Base suffused with dark brown as far as origin of nervule 2. Beyond this the costa, cell, extreme base of area 3, basal half of 2, and the whole of 1b and 1a, orange tawny. Remainder of wing dark brown. A series of three subapical tawny spots separated only by the subcostal and nervule 6, followed by a submarginal spot in area 4.

H.-w. entirely orange tawny except for a very slight brownish suffusion at base, and faint indications of two or three minute black subbasal dots.

Underside. The tawny colour of a duller shade. F.-w. slightly darkened at base. Between end of cell and the outer tawny spots, as dark as on upperside, the spots paler, and the apical and marginal area dull red brown.

H.-w. with a faintly indicated dusky curved band beyond cell extending from costa to inner margin. A few small black dots variable in number, the specimen with the greatest number of these shows one at base in 9 and 1c, one in 8, two in 7 the second well beyond origin of nervule 7, two in cell, the second before origin of nervule 2, faint indications of discal spots in 6, 5, 4, and 3, and two in 1c, 1b, and 1a respectively.

Head and thorax black with two reddish tufts on collar, abdomen black above with yellowish lateral white dots.

The three other examples of this species now before me differ from that above described in the following manner:—

(1) The central band of f.-w. is pale tawny, the spots rather darker in shade. The h.-w. is pale creamy white, slightly blackened at base.

(2) All the light areas in both wings pale ochreous.

(3) F.-w. central band and the whole of h.-w., except at base, pale creamy white. F.-w. subapical spots pure white.

This peculiar species seems to occur only on the east side of L. V. Nyanza, two of the above examples being labelled Nandi country, one "60 m. along the Anglo-German Boundary," the fourth Limoru, at mile-post 407 on the Uganda Railway. It is remarkable that they should be all ♀♀, and one is tempted to suppose that they are merely one more form of the polymorphic *A. conjuncta*. Though such may well be the fact, it seems better, with the present paucity of material, to keep the form separate.

125. *ACRAEA CONJUNCTA*. Pl. XIV, f. 13.

Acræa conjuncta, Grose-Smith, Novit. Zool., v, p. 351 (1898);

Aurivillius, Rhop. Aeth., p. 117 (1898); Grose-Smith,

Rhop. Exot. (*Acræa*), vi, p. 22, pl. 6, f. 11, 12 (1901).

f. *interrupta* f. n.

♀ f. *silacea* f. n.

♀ f. *mutata* f. n.

♀ f. *pica* f. n.

♀ f. *lutealba* f. n.

♀ f. *suffusa* f. n.

BRITISH E. AFRICA (Kavirondo, Nairobi, Aberdare Hills, Mt. Kokanjero).

A. conjuncta conjuncta.

♂. Expanse 40-46 mm. F.-w. deep brown-black. A central curved band of deep ochreous formed by a quadrate spot occupying the whole of distal end of cell, a similar patch in 2 not quite reaching the base of that area, and a central patch in 1b, and 1a. A small spot of the same colour at base of area 3. Beyond cell a subapical series of 3-4 small deep ochreous spots in 10, 9, 6, and 5, followed by a submarginal spot of the same colour in area 4.

H.-w. deep ochreous, the base suffused with dark brown, the inner margin powdered with the same colour as far as 1b. A hind-marginal border of dark brown 3-4 mm. wide its inner edge somewhat irregular and edentate between the nervules. A few minute black discal spots faintly indicated.

Underside paler and duller, the pattern much less distinct. In h.-w. some minute black spots very variable in number. The example before me having the largest number of these spots shows the following:—A basal spot in 9 and in 1c. Two in 7, the outermost well beyond origin of 7, one in cell before origin of 2, a series of three small discal spots in areas 5, 4, and 3 in a nearly vertical line, one in 1c and 1b, and one in 1a.

Head black with two reddish tufts in collar. Thorax black, abdomen black above, with minute lateral yellowish dots. Claws unequal.

♀. Expanse about 35 mm. Resembles the ♂.

f. interrupta.

In this form which occurs in both sexes the central band of the f.-w. is not continuous but is broken into spots, that in area 1b being sometimes reduced to a mere streak.

♀. f. silacea.

The f.-w. spots, and the central patch of h.-w. are pale ochreous.

♀. f. mutata.

Resembles the foregoing but the f.-w. subapical spots are white.

♀. f. pica.

All the pale markings are white.

♀. f. lutealba.

The pale markings of f.-w. are orange ochreous, whilst the central patch of h.-w. is white.

♀. f. suffusa.

In the f.-w. the brown black ground-colour is much reduced in area and remains only as a basal and a subapical suffusion,

a little dark scaling remaining on the nervules in the subapical region. The remainder of the wing is orange ochreous. In the h.-w. the dark border, though nearly as wide as in other forms has a much browner appearance owing to an admixture of orange ochreous scales. Base and inner margin suffused with greyish. Remainder of wing orange ochreous.

A. conjuncta is still rare in collections, indeed until quite recently only very few examples were known. It has however lately been taken in some numbers by Neave on Mt. Kokanjero, and his series contains all the forms mentioned above. The polymorphism of the species appears to be associated with that of *A. johnstoni*, a great number of forms of the latter having been taken at the same time and place.

126. *ACRAEA DISJUNCTA*. Pl. XIV, f. 12.

Acraea disjuncta, Grose-Smith, Novit. Zool., 5, p. 351 (1898); Aurivillius, Rhop. Aeth., p. 117 (1898); Grose-Smith, Rhop. Exot. (*Acraea*), vi, p. 20, pl. 6, f. 7, 8 (1901); Heron, Trans. Zool. Soc. xix, p. 148 (1909).

= *Planema nandensis*, E. M. B. Sharpe, Ann. Nat. Hist. iii, p. 244 (1899).

BRITISH E. AFRICA (Nandi); CONGO (nr. L. Kivu; Mt. Ruwenzori, 5-7,000 ft.; "90 km. W. of Albert Nyanza").

♂. Expanse 44-48 mm. F.-w. Costa, cell, base of 1b and 1a, apical area, and hind margin sepia black. A large subapical and inner marginal patch of pale ochre yellow. The dark colour extends a little beyond cell and is continued in area 3 so as to join, or nearly join, that of the hind margin, thus isolating a subapical patch of the paler colour. This patch is almost 4 mm. wide in areas 6, 5, and 4, is somewhat narrower at costa, and in area 3 is reduced to about 2 mm. The inner marginal patch occupies the whole of area 2 except at hind margin, and becomes gradually wider to the inner margin.

H.-w. pale ochre yellow with a slight dusting of brownish scales at base, and a hind-marginal border of sepia brown the inner edge of which is slightly suffused.

Underside. A pale replica of the upper, the f.-w. cell somewhat suffused with pale ochreous, and the darker colour of apex, margin, and base of area 1b, dusky ochreous. Nervule ends and rays finely marked in black brown. H.-w. margin dusky ochreous. Nervules and rays finely marked in black brown, the latter long and extending inwards almost to cell.

A few minute black spots of which there are, one at base in 9, one in 8, 2 in 7, two in cell (close together, the second just before origin of nervule 2) and two in 1c, 1b, and 1a.

Head and thorax black with a few yellowish spots. Abdomen black above with dark ochreous lateral spots and segmental lines. Claws unequal.

♀. Expanse 50 mm. Resembles ♂ but in some examples there is a dusting of ochreous scales near end of f.-w. cell and the brown basal colour is sometimes not quite extended to the marginal border, the subapical and hind-marginal patches thus being continuous. In the h.-w. the inner edge of the marginal border is rather more suffused than in the ♂ and is sometimes slightly powdered with orange ochreous scales whilst the dark colour is narrowly edentate on the nervules.

On the underside the h.-w. base a curved suffused band of brownish colour beyond the cell, followed by a paler area, and the marginal border is inclined to reddish brown.

This species appears to be fairly common some 20 m. N. of Kisumu, whence a good series has been received by the Oxford Museum from Mr. C. A. Wiggins. Examples from other localities than Nandi have usually much heavier black markings. It is a much smaller insect than *A. jodutta*, and is easily distinguished from *A. alciope* by the extension of the f.-w. dark costal colour to the margin, and by its duller ochreous colour. At the same time it is very closely allied to *alciope*, though the latter has equal claws in the ♂.

127. *ACRAEA ALCIOPE*. Pl. XIV, f. 11.

Acraea alciope, Hewitson, Exot. Butt. (*Acraea*), pl. 1, f. 4 (♀ non ♂), 1852; Karsch, Berl. Ent. Zeit., 38, p. 196 (1893); Aurivillius, Rhop. Aeth., p. 116 (1898); Eltringham, Af. Mim. Butt., p. 44, pl. 3, f. 23 (1910); Poulton, Bedrock, p. 59 et seq., ff. 3, 4, 8, 9, 10 (1912).

♂ (= *cydonia*), Ward, Ent. Mo. Mag., 10, p. 59 (1873); Karsch, Berl. Ent. Zeit., 38, p. 196 (1893); Aurivillius, Ent. Tidskr., 14, p. 278 (1893); Eltringham, Af. Mim. Butt., p. 44, pl. 3, f. 16 (1910).

IVORY COAST; ASHANTI; TOGO; CAMEROON; FERNANDO Po; CONGO (Inkissi R., Aruwimi R., Kassai R.) to UGANDA (Toro, Entebbe).

♀ f. *macarina*, Butler, Proc. Zool. Soc., p. 221, pl. 17, f. 6 (1868); Hewitson, Exot. Butt. (*Acraea*), pl. 1, f. 5 (1852); Aurivillius, Ent. Tidskr., 14, p. 278, f. 6 (1893); Rhop.

Aeth., p. 116 (1898); (metamorph.), Ent. Tidskr., 14, p. 278, pl. 5, f. 3 (1883).

GOLD COAST; ASHANTI; CALABAR; CAMEROON; FERNANDO Po; CONGO (Maringa, Kassai R., Stanley Pool, Bopoto, Ft. Beni).

♀ f. *cretacea*, f. nov.

= *alciope* ♀ Poulton, Bedrock, 1, p. 63, f. 11 (1912).

LAGOS.

♀ f. *fumida*, f. nov.

LAGOS.

♀ f. *aurivillii*.

= *A. aurivillii*, Staudinger, Iris, 9, p. 209, pl. 2, f. 2 (1896); Aurivillius, Rhop. Aeth., p. 117 (1898); Eltringham, Proc. Ent. Soc., p. lxvii (1909); Af. Mim. Butt., p. 45, pl. 8, f. 4 (1910).

= *Planema alicia* ♀, Grose-Smith, Novit. Zool. vii, p. 546 (1900); Smith and Kirby, Rhop. Exot. (*Acræa*), 8, p. 30, pl. 8, f. 11 (1901).

= *alciope* ♀ Poulton, Bedrock, p. 62, ff. 7, 14 (1912).

CAMEROON to UGANDA (Toro, Entebbe).

f. *latifasciata*, Grünberg, Sitzb. Gesell. naturf. Freunde, p. 164 (1910).

♀ f. *tella*, f. nov.*

= *Planema alicia* "♂," Grose-Smith, Novit. Zool., p. 546 (1900); Smith and Kirby, Rhop. Exot. (*Acræa*), 8, p. 30, pl. 8, f. 9, 10 (1901).

= *alciope* ♀ Poulton, Bedrock, p. 62, f. 12 (1912).

UGANDA (Entebbe, Pt. Alice).

A. alciope schecana, subsp., Roth. and Jord., Novit. Zool., xii, p. 184 (1905); Eltringham, Af. Mim. Butt., p. 44 (1910).

ABYSSINIA (Scheko).

A. alciope alciope. Pl. VI, f. 10 (larva).

♂. Expanse, 54-64 mm. F.-w. Cell, base of 1a, 1b, 3, 4, 5, and 6, costa, apex, and hind margin brown-black. Remainder golden ochreous, this colour forming an angulated band across the wing, narrow at costa, and proceeding downwards and outwards to nervule 3, where it becomes wider, occupying the whole of area 2 except the hind margin, and reaches its maximum width on inner margin.

H.-w. golden ochreous. A very little brown black at base, and a hind-marginal border of the same colour some 3-4 mm.

* The name *alicia* cannot be retained, as I indicated in Proc. Ent. Soc., l. c. (1909).

wide, its inner edge rather deeply edentate on and between the nervules. Near base the spots of the underside are faintly indicated.

Underside. F.-w. The dark areas of upperside are here replaced by dusky yellow, somewhat blacker just beyond cell. The nervule ends and rays black. A dark spot enclosing a pale dot at base of costa, yellow band as on upperside, but paler and duller.

H.-w. warm ochre yellow with a dusky powdering on hind-marginal border. Nervules and rays black. Black spots as follows:—One at base in 9, one in 8, two in 7, the second over origin of nervule 7, two in cell, the second over origin of nervule 2. Sometimes a small dot near base of area 5. A basal, a subbasal, and a median spot in 1c, and the same in 1b. A subbasal in 1a, and sometimes a second very small spot in the same area.

Head black with a yellowish dot between, and two white lines behind the eyes. Thorax black with yellowish dorsal and lateral spots. Abdomen black above with deep yellow lateral spots increasing in size towards the extremity. Between the spots pale transverse segmental lines. Claws equal.

♀.* Expanse 57–70 mm. F.-w. Costa, cell, and base of areas 1b, 4, 5, and 6, powdered with black. Outer half of wing grey black. Subcostal, median, base of area 2, middle of area 1b, and the greater part of 1a, orange tawny, this colour radiating somewhat along the nervules in the central area of wing. At base of area 3 a black spot, beneath it in 2 a larger transverse spot, and beneath the latter, but rather nearer base, a subcrescentic spot in 1b.

H.-w. slightly darkened at base. Basal half orange tawny. Hind margin broadly grey black, its inner edge deeply radiate. The basal spots of underside are visible as brownish markings.

Underside much as above, but f.-w. ochreous grey with some black just beyond, and a black streak at end of cell. A dull orange suffusion about median, base of area 2, and middle of area 1b. On outer half of wing the nervule ends are reddish brown, and between them are rather broad black rays. H.-w. brownish at base, a pinkish white flush beyond cell, remainder ochreous grey striated by black nervules and nervules. Spots as in ♂ but larger, and often an extra spot in cell and one near base of areas 6 and 2.

* I regard the typical ♀ as the form figured by Hewitson (*l. c.*), and it is this form which is here described.

A. alciope ♀ f. *macarina*.

This form more nearly resembles the ♂ in that it has a continuous band of dark ochreous in the f.-w., but this band is narrow, and in areas 3, 2 and 1b is deeply indented by the grey-brown of the hind margin. The black spots in the same areas are outwardly well defined but basally, especially in 2 and 1b, they become diffused into the basal brown. The h.-w. is deep ochreous with a powdering of brown black about apex and along hind margin. Nervules and rays well marked, and scaled with black-brown. The underside corresponds to the upper, but in the f.-w. the dark areas are replaced by dusky ochreous, and the black spots in 3, 2, and 1b are well defined.

A. alciope ♀ f. *cretacea*.

Basal half of wing sepia black, somewhat darker just beyond cell and in areas 3, 2, and 1b, where the spots occur in the typical form. An inner marginal suffusion of reddish brown extending into middle of area 1b. Beyond the dark basal portion a band of white which is inwardly sharply defined but outwardly becomes rapidly diffused into the sepia grey which occupies the distal half of wing.

H.-w. tawny brown, the hind margin sepia grey radiating deeply into the ground-colour. Underside corresponding to the upper, but distal portion of f.-w. ochreous grey, and the curved black mark in 1b very distinct. H.-w. pale ochreous brown, otherwise as in typical examples.

A. alciope ♀ f. *fumida*.

The pattern of the wings is almost obliterated. Both wings are sepia brown somewhat darker at base, a slight reddish powdering in the middle, and with traces of the normal black spots.

A. alciope ♀ f. *aurivillii*.

Bears a striking resemblance to *Planema poggei nelsoni*, and allied forms.

F.-w. brown black with a broad central band of orange ochreous inwardly irregular though sharply defined; outwardly, especially in areas 3, 2, and 1b, often deeply indented by the brown-black ground-colour.

H.-w. a triangular umber brown patch at base, followed by a central transverse band of white, the remainder of wing brown black, reddish brown, or even tawny; this area being heavily striated by the dark nervules and rays.

Underside. F.-w. as above but paler and duller. Traces of the black spots in 3, 2, and 1b are visible. H.-w. basal

triangular patch chocolate brown with the usual black spots more developed than in western forms. Remainder of wing as on upperside.

The outline of the orange band of f.-w. is somewhat variable, being sometimes deeply indented, sometimes nearly straight. Examples presenting the latter condition have been named var. *latifasciata* by Grünberg.

A. alciope ♀ f. *tella*.

This is the form figured by Grose-Smith as the ♂ of his "*Planema alicia*." It is however a ♀ and differs from the usual *aurivillii* form in having the ground-colour of h.-w. tawny without any white bar, and bearing a narrow dark hind-marginal border, widest at apex and tapering to anal angle.

A. alciope schecana, subsp.

This is the Abyssinian form of the species, and is described by Rothschild and Jordan from one ♂ in the Tring collection. The ochreous band of the f.-w. upperside is somewhat paler than in West African examples, and the black distal border of the h.-w. is wider. On the underside the black spots of h.-w. are reduced in size and number.

The descriptions of the larva and pupa, given by Aurivillius (*l. c.*) are as follows:—

Larva pale (yellowish?) with narrow dark transverse lines. Head, true legs, and spines, black. The sublateral spines, however, only black at the ends. The spines distinctly longer than the diameter of the body, and arising from brownish tubercles.

Pupa, having the usual black markings of the *Acraea* pupae. The spots of the abdomen have pale centres, and the two dorsal rows converge in a black spot on the first segment. In the pale centres of the dorsal spots of segments 2-5 (6) are small pointed tubercles, largest at segment 2 and decreasing posteriorly.

These descriptions agree fairly well with specimens received from Mr. Lamborn, from Lagos. One of these larvae I have figured on Pl. VI, fig. 10. It will be noted that the ground-colour is green. This colour is rapidly lost in spirit, a fact which would account for the doubt expressed by Aurivillius as to the colour of the larva. At Lagos it feeds on *Fleurya podocarpa*, Wedd. (*Urticaceae*). I cannot

regard the *aurivillii* f. of *A. alciope* as a subspecies, since it occurs with the typical form in Cameroon as well as in Uganda, and probably occasionally in the intervening country. It is an interesting fact that at Entebbe, where this is the usual form of ♀, it habitually flies with the *Planema* which it so closely resembles, whilst the typical ♀, which is much the commonest form in its western range, also accompanies an entirely different *Planema* which it appears to imitate. Uganda examples of *A. alciope* ♂ seem often to have the black distal border in the h.-w. broader than in more western specimens.

128. *ACRAEA JODUTTA*. Pl. XIV, f. 10.

Acraea jodutta, Fabricius (*Pap.*), Ent. Syst., 3, 1, p. 175 (1793)*;
Butler (*A*), Fabr. Lepid., p. 130 (1869); Aurivillius, Rhop.
Aeth., p. 116 (1898); Ann. Mus. Genov., 3, iv, p. 20
(513) (1910); Eltringham, Af. Mim. Butt., p. 80 (1910);
Grünberg, Sitzb. Ges. nat. Fr., p. 150 (1910).

♂ = *flava*, Dewitz, Nov. Act. Nat. Cur., 41, 2, No. 2, p. 19,
pl. 1, f. 10 (1879).

= *gea*, Möschler, Abhandl. Senckenb. Ges., 15, p. 55 (1887).

SENEGAL; S. LEONE; ASHANTI; CAMEROON; NIGERIA;
PRINCE'S I.; UGANDA (Entebbe); BRITISH E. AFRICA (Kisumu);
NYASSALAND.

♀ f. *carmentis*, Doubl. Hew. and Westw., Gen. Di. Lep.,
p. 140, pl. 19, f. 1 (1848).

= *Planema dorotheae* ♀, E. M. B. Sharpe, Entomologist,
p. 135 (1902).

Appears liable to occur throughout the range of the species.

♀ f. *dorotheae*.

= *Planema dorotheae* "♂," E. M. B. Sharpe, Entomologist,
p. 135 (1902).

= *jodutta*, ♀ var., Eltringham, Af. Mim. Butt., p. 81, pl. 8,
f. 9 (1910).

UGANDA (Entebbe); BRITISH E. AFRICA (Kisumu).

♀ f. *interjecta*, f. nov.

BRITISH E. AFRICA (Tiriki).

♀ f. *subfulva*, f. nov.

S. LEONE.

* The type is evidently a ♀, as it is described as black with white markings. Westwood's copy of Jones' figure in "Icones" (ined.) shows a ♂ with buff markings, but there is a note beneath it in Westwood's writing mentioning that Jones' figure is uncoloured.

♀ *f. castanea*, f. nov.

LAGOS (Oni).

♀ *f. inaureata*, f. nov.

NYASALAND (Nr. Florence Bay).

A. jodutta aethiops, subsp.

Roth. and Jord., Novit. Zool. xii, p. 183 (1905).

ABYSSINIA (Dereta Mts. ; Gamitscha to Anderatscha).

A. jodutta jodutta.

♂. Expanse 60–70 mm. F.-w. sepia brown. Beyond the cell a curved subapical band of elongate pale ochreous spots separated only by the nervules beginning close to costa and becoming gradually wider as far as nervule 4. Beneath this nervule the band ends with a much shorter spot, the lower edge of which reaches the middle of area 3. An inner marginal patch of pale ochreous reaching almost to base and to hind angle in 1a, becoming narrower as it extends upwards and ending in area 2 with a width of about 8 mm.

H.-w. with a slight sepia brown basal suffusion on which can be discerned a few minute dark spots. Central area pale ochre yellow. Hind margin broadly dusted with sepia brown forming a wide marginal border, the inner edge of which is usually quite indistinctly defined, the whole wing beyond cell being striated by well-marked dark internervular rays and nervules.

Underside. F.-w. Cell and area beyond it, as far as the subapical band, sepia, the cell somewhat dusted with pale ochreous. Costa, apical area and hind margin dusky ochreous, traversed by fine black nervules and rays. Subapical band and inner marginal patch as above but paler. A dusky suffusion at base of area 1b.

H.-w. pale dusky ochreous, the base and hind-marginal area just perceptibly darker. Nervures and nervules narrowly but strongly marked and the internervular rays extend in well-marked lines right up to the cell in each space. A dusky line in the cell. A few small black dots near base arranged as follows :—One in 9, one in 8 against precostal, two in 7 rather close together, two in cell the second before the origin of nervule 2, a basal and a subbasal in 1c, and in the same area a third spot at the level of origin of nervule 2 (often doubled), two in 1b, and 1a.

Head and thorax black with a few pale dots. Abdomen black above and orange beneath with orange lateral spots, and whitish segmental lines. Claws unequal.

♀. Expanse about 70 mm. Resembles ♂ in pattern but the dark areas are somewhat blacker, and the pale ochreous areas are replaced by white. In f.-w. the subapical band is somewhat reduced in width, and the inner marginal patch is very small and ill defined. On the underside the pattern is the same as above, and the blackish areas are the same, and are not replaced by ochreous as in ♂.

A. jodutta ♀ f. *carmentis*.

In this form the white of f.-w. subapical band and of inner margin is much extended and almost joined in the neighbourhood of nervule 2.

A. jodutta ♀ f. *dorotheae*.

The f.-w. subapical band is rather broader than usual, and is golden yellow shading to rather paler or even white, towards costa. The inner marginal patch is nearly as large as in the ♂ and is golden yellow. The h.-w. is a slightly deeper shade of the same colour, and though very distinctly striated by black nervules and long black rays has very little dark marginal suffusion, there being just a little powdering towards the apex.

On the underside the f.-w. has the cell and central portion blackish and the apical and hind-marginal area dull orange ochreous. H.-w. dull orange ochreous with fine black nervules and rays.

Some examples of this form have the subapical patch white.

A. jodutta ♀ f. *interjecta*.

The f.-w. subapical band is white as in typical ♀, but the inner marginal patch is a mere sprinkling of pale ochreous scales, except in 1a where it is well defined. In the centre of area 2 is a longitudinal submarginal white streak.

H.-w. basal area pale ochreous with a slight brownish basal suffusion. Outer half of wing dusted with reddish brown suffused with sepia at apex.

Underside. F.-w. apex and hind margin dull reddish brown. H.-w. dull orange at base, outer half suffused with dull reddish brown.

A. jodutta ♀ f. *subfulva*.

Resembles the typical ♀, but the outer half of h.-w. is reddish brown, the inner edge of this colour being rather sharply defined. A dusting of sepia brown about apex and along hind margin.

♀ f. *castanea*. Pl. V, f. 1.

F.-w. rich sepia-black. The subapical patch almost obliterated.

ated and appearing only as a mark slightly paler than the ground-colour. Inner marginal patch rather narrow, tawny brown.

H.-w. rich chestnut, slightly darkened at base and having a very narrow sepia black hind-marginal border, inwardly suffused and broadest at apex. Nervules and rays well marked black.

Underside. F.-w. basal half black with the inner marginal patch somewhat duller than above. Subapical patch whitish brown. Apex umber brown.

H.-w. umber brown, reddish at base, and rather pale over end of cell and bases of areas 4, 5, and 6. Spots as in typical forms. ♀ *f. inauareata*. Pl. V, f. 8.

F.-w. basal half rich golden yellow. Apical half black with a large oblique white patch extending from near costa into area 3. A small white streak in area 2 near margin and a slight powdering of white in area 1b.

H.-w. rich golden yellow without basal suffusion or hind-marginal border. A fine black marginal line. Ends of nervules and rays black, especially toward apex.

Underside. F.-w. as above but duller, the apex dark ochreous with finely marked nervules and rays. H.-w. as above but duller. Slightly reddish at base. Black spots as in other forms.

This beautiful form was taken by Neave on the road to Florence Bay, Nyassaland, at an elevation of 4,500 ft.

A. jodutta aethiops, subsp.

♂. On the upperside the f.-w. has the inner marginal patch extending closer to base, and there is a diffused buff patch in cell. The h.-w. basal patch is reduced and the black distal border is narrower and more sharply defined between costa and nervule 3.

♀ has the subapical band either orange or white. The inner marginal patch is golden orange and is much larger than in the typical form.

H.-w. golden orange with very little brown at base and only a dusting of that colour at apex. The internervular rays are scarcely visible in areas 3 to 1a, whilst on the underside they are much reduced in 7 to 4.

It is not always easy to distinguish examples of *A. jodutta* from those of *A. esebria*. The former may, however, usually be known by the very suffused appearance of the dark hind-marginal colour in the h.-w. Also the inter-

nervular rays of the h.-w., especially on the underside, are much longer than in *esebria* and almost touch the cell. There is some temptation to regard *jodutta* as the western form of *esebria*, but I am quite satisfied that they are distinct species. There is a marked peculiarity in the male armature of *esebria*, viz. the internal tooth-like process on the inner side of the claspers towards their base, which is quite constant in that species from Angola to the Comoro Is., and which does not occur in that of *jodutta*. It is, however, a very remarkable fact that the male armatures of *jodutta* and *alciope* are very similar, suggesting a close alliance, whilst at the same time *alciope* belongs to the small minority of species in which the ♂ tarsal claws are symmetrical.

A. jodutta extends from Senegal through S. Leone, Ashanti, Nigeria, and Cameroon across the Congo State to Uganda and Abyssinia.

The form *dorotheae* is most common near Entebbe, where it closely resembles a form of *Planema tellus*, common in that locality.

129. ACRAEA ESEBRIA. Pl. XIV, f. 9.

Acraea esebria, Hewitson, Exot. Butt., pl. 2, f. 11 (1861); Weale, Trans. Ent. Soc., p. 271 (1877); Möschler, Verh. z. b. Ges. Wien., 33, p. 283 (1883); Trimen, S. Af. Butt., 1, p. 177, pl. 1, f. 2, 2a (metamorph.), (1887); Aurivillius, Rhop. Aeth., p. 115 (1898).

= *protea*, var. B, Trimen, Rhop. Af. Austr., p. 111, pl. 3, f. 2 (1866).

CAPE COLONY; NATAL; ZULULAND; MASHONALAND; BELGIAN CONGO (Katanga); GERMAN E. AFRICA; BRITISH E. AFRICA.

f. *protea*, Trimen, Rhop. Af. Austr., p. 110 (1866).

= *esebria*, ♀, Hew., Exot. Butt. (*Acraea*), pl. 2, f. 12 (1861); Staud., Exot. Schmett., 1, p. 85, pl. 33 (1885).

= *esebria*, var. A, Trimen, S. Af. Butt., 1, p. 178 (1887).

= *arctifascia*, Butler, Trans. Ent. Soc., p. 427 (1874).

ANGOLA; CAPE COLONY; NATAL; ZULULAND; MASHONALAND; GERMAN E. AFRICA; BRITISH E. AFRICA.

f. *pseudoprotea*, Butler, Trans. Ent. Soc., p. 428 (1874).

ANGOLA.

♀ f. *amphiprotea*, Butler, Trans. Ent. Soc., p. 428 (1874).

ANGOLA.

♀ f. *metaprotea*, Butler, Cist. Ent., 1, p. 211 (1874).

ANGOLA (Ambriz).

f. *jacksoni*, E. M. B. Sharpe, Ann. Nat. Hist. (6), 5, p. 335 (1890); Waterhouse, Aid., pl. 189, f. 1 (1890); Rogenhofer in Baumann, Usambara, p. 326 (1891).

MASHONALAND; GERMAN E. AFRICA; BRITISH E. AFRICA.

f. *monteironis*, Butler, Cist. Ent. 1, p. 211 (1874); Trans. Ent. Soc., p. 427 (1874); Grünberg, Sitzb. Ges. nat. Fr., p. 150 (1910).

ANGOLA; MASHONALAND; BRITISH E. AFRICA; UGANDA (Sesse I.).

♀ f. *nubilata* f. nov.

E. CENTRAL ZULULAND (Llabisa).

f. *ertli*.

= *A. ertli*, Aurivillius, Ent. Tidskr., p. 94, f. 34 (1904).

GERMAN E. AFRICA (Usambara).

A. esebria masaris, subsp.

= *A. masaris*, Oberthür, Etud. d'Ent., 17, p. 27, pl. 1, f. 3, 12, pl. 2, f. 18, pl. 3, f. 30 (1893).

COMORO I.

A. esebria esebria.

♂. Expanse 56-68 mm. F.-w. black brown. A subapical band of five pale ochreous spots in 10, 6, 5, 4, and 3, the spot in 4 being the longest, the others 2-3 mm. in length. That in 3 short and only extending to half the width of the internervular space. An inner marginal patch of tawny orange occupying nearly the whole of area 1a, the middle two-thirds of 1b, and extending slightly into 2 at its base.

H.-w. slightly darkened at base, remainder tawny orange, with a hind-marginal band of brown black about 4 mm. wide, but very variable, and radiating inwardly on and between the nervules. A few small black spots about the base.

Underside. F.-w. basal portion as far as subapical band sepia black, somewhat inclined to tawny on costa. Apical and hind-marginal areas tawny brown striated by black nervules and rays. Subapical band and inner-marginal patch as above but paler.

H.-w. tawny brown, inclined to dusky on hind margin. Black spots variable, generally as follows:—One at base in 9, one in 8 against precostal, two in 7, the second before origin of nervule 7, two in cell close together in basal half, a minute dot near base of areas 2, 4, and 5. A basal and a subbasal in 1c, followed by a twin spot below origin of nervule 2. A basal, a subbasal, and a distal in 1b, and two minute dots in 1a. Nervules and rays narrowly black, the latter not usually extending inwardly so nearly to the cell as in *iodutta*.

Head black with a tawny spot between the eyes, and two on the collar. Thorax black with a few paler spots. Abdomen black above with orange tawny lateral spots and fine inter-segmental lines. Claws unequal.

♀. Expanse 64–74 mm. Resembles the ♂ but the ground-colour is rather browner, and the f.-w. subapical band is broader, and white instead of ochreous. Inner edge of h.-w. marginal border usually less well defined.

A. esebria f. *protea*.

♂. F.-w. pattern as in typical form but the subapical band and inner marginal patch are pale dull ochreous.

H.-w. rather more darkened at base. Hind-marginal border inwardly more sharply defined, and the central area is pale dull ochreous.

♀ like the ♂ but the f.-w. subapical band is broader, and white, and the inner-marginal patch and central area of h.-w. are pale creamy ochreous.

A. esebria f. *pseudoprotea*.

♂ rather smaller than typical form. Ground-colour pale ochreous brown. F.-w. subapical band rather broader, pale ochreous, inner-marginal patch pale ochreous. H.-w. also pale ochreous, the hind-marginal border narrow and inwardly much suffused.

♀ (type) rather larger, having the ground-colour as in ♂, the subapical band and inner-marginal patch pale tawny, h.-w. much as in ♂ but marginal border broader and rather better defined.

A. esebria f. *amphiprotea* (♀).

The type is a large ♀ from Angola. Ground-colour medium dark brown, the subapical band pale tawny and about twice the width of that in the typical ♀. There is a tawny submarginal streak in area 2, and the inner-marginal patch, and the central area of the h.-w. are pale tawny. The h.-w. marginal border is of medium width and inwardly suffused. There seems to be no particular form of ♂ associated with it.

A. esebria f. *metaprotea* (♀).

This form is very like *A. jodutta*. The type is a large ♀. The f.-w. is nearly all pale tawny with the cell black brown, and a band of the same colour extending from costa to middle of area 2 where it becomes broken up. The apical and hind-marginal areas brown. The h.-w. is very pale tawny and has only a dark marginal line and hardly any basal suffusion. The nervules and rays are narrowly darkened.

A. esebria f. jacksoni.

The ♂ resembles the type but has the f.-w. subapical band rather broader and tawny orange instead of ochreous.

The ♀ has the subapical band very broad, tawny, and joining the inner-marginal patch near the end of area 2 leaving only the cell and apex dark, and a somewhat broken dark central band. The h.-w. marginal band varies in width from about 4 mm., to a mere darkening of the edge.

A. esebria f. monteironis.

♂ resembles the ♂ *pseudoprotea* but the pale areas are white.

♀. The f.-w. subapical band is very broad formed by six large white spots in 6, 5, 4, 3, and 2, and a little above subcostal. The inner-marginal patch is white and does not extend beyond area 2. The h.-w. is white with a small basal brown suffusion and a broad well-defined hind-marginal border.

A. esebria ♀ f. nubilata.

The darker areas are sepia black. The base of f.-w. cell, the inner-marginal patch, and the basal half of the h.-w. are dark sepia grey. The f.-w. subapical band is greyish white.

There is a single example of this form in the Oxford collection, taken at Llabisa, in E. Central Zululand.

A. esebria ♀ f. ertli.

This form the type of which has been kindly lent to me by Herr Ertl, was described by Aurivillius as a new species. I am satisfied however that it is in fact a form of *esebria*, and in this conclusion Professor Aurivillius now concurs. Its most striking feature is the f.-w. subapical band which is very wide and strongly curved. It consists of six elongated spots the inner edge of which traverses the wing at right angles to the costa as far as nervule 4 where it curves round, first inwards and then outwards, reaching nervule 2. The outer ends of these spots are rounded and somewhat separated by nervular indentations of the ground-colour which, over the apical and hind-marginal areas, is black brown. The cell and the costa above it are brownish grey, followed by a band of black brown from the end of cell to the subapical white. This band occupies the base of area 3 and beneath that tapers to an outwardly curved point in area 2. The inner-marginal patch is tawny and extends inwardly to the base in areas 1a and 1b. The white spot in area 2 is powdered with tawny at its basal side.

H.-w. tawny brown with a narrow black brown hind-marginal border deeply edentate on and between the nervules.

The underside corresponds to the upper in the same way as in typical examples.

I have seen only one example of this form, viz. the type, though in the collection of Mr. C. J. Grist there is an example which comes very near it in pattern, but the f.-w. subapical bar is pale tawny instead of white.

A. esebria masaris, subsp.

This island form of *esebria* is characterised by its smaller average size, the ♂ being about 50 mm. and the ♀ about 56 mm. in expanse, and by the larger size of the pale spot in f.-w. area 2. The wings are somewhat more rounded than in the type form. The ♂ has the f.-w. black brown with a rather narrow subapical band varying in colour from ochreous to orange, and a narrow inner marginal patch of the same colour. The h.-w. has a dark grey basal area extending to about the middle of cell, followed by an orange or ochreous central band and a broad black brown hind-marginal border usually well defined inwardly.

The ♀ presents the same pattern but the f.-w. subapical band is somewhat broader, and the paler markings may be either orange ochreous or white.

This form may usually be recognised by the much larger pale spot in f.-w. area 2, but though specimens have a generally different appearance from those taken on the mainland it is difficult to point out a really constant difference.

The larva of *A. esebria* is described by Trimen as follows :—

“About $1\frac{1}{4}$ in. long. Pale ochreous brown ; each segment (except head, and segment next to it) banded transversely and centrally with a black streak edged on both sides with a pale yellow streak. A lateral stripe of the same pale yellow. Head black. Second, twelfth, and thirteenth segments each with two black spines ; third and fourth segments each with two pairs of black spines, each of the remaining segments with four black spines springing from central black streak, and two lateral pale yellow spines. On a species of *Fleurya*, in February and March.”

The same author thus describes the pupa :—

“About $\frac{3}{4}$ in. long. Chalky white with a faint yellowish tinge. A series of very fine linear black markings along dorso-thoracic ridge. Antennae and wing-nervures faintly indicated

by delicate linear black markings. Five rows of abdominal black spots, viz. two dorsal, two lateral, and one ventral; these markings are sometimes slightly tinged with orange, and the dorsal ones on the first three segments of the abdomen are conspicuously orange, black edged, tubercular, and pointed. At anal extremity three looped black marks. Head very slightly bifid. Thorax prominently angulated at bases of wing covers, and with a pair of smaller projections posteriorly. Duration of pupal state eight days."

Acraea esebria is very closely allied to *A. jodutta* and both seem to vary in similar directions. The latter species can usually be recognised by the much less distinct definition of the hind-wing marginal border (when present) and by the longer internervular rays on the underside of the hind-wing, these rays reaching almost to the cell. In the case of so variable a species much more material is required before we can decide whether any of the foregoing forms should be regarded as subspecies.

130. *ACRAEA LYCOA*. Pl. XIV, f. 6.

Acraea lycoa, Godart, Enc. Méth., 9, p. 239 (1819); Staudinger, Exot. Schmett., 1, p. 85 (1885); Dewitz, Ent. Nachr., p. 104 (1889); Aurivillius, Rhop. Aeth., p. 115 (1898); Poulton, Trans. Ent. Soc., p. 305 (1906); Eltringham, Af. Mim. Butt.,[†] p. 47 (1910); Trans. Ent. Soc., p. 12, pl. 1, f. 1, 2, pl. 2, f. 1, 4 (1911).

S. LEONE to NIGERIA; PRINCES I.

A. lycoa media, subsp.

Eltringham, Trans. Ent. Soc., p. 12 (1911).

= *lycoa*, Aurivillius, Ent. Tidskr., 14, p. 277, Aurivillius (metamorph.) ; p. 278, pl. 5, f. 2, 2a, 2b (1893).

FERNANDO Po to TORO.

A. lycoa bukoba, subsp.

Eltringham, Trans. Ent. Soc., p. 12, pl. 1, f. 3, 4 (1911).

? = *lycoa*, Grünberg, Sitzb. Ges. nat. Fr., p. 150 (1910); [Sesse I.].

URUNDI COUNTRY between L. Tanganyika and L. V. NYANZA.

A. lycoa entebbia, subsp.

Eltringham, Trans. Ent. Soc., p. 12, pl. 1, f. 5 (1911).

UGANDA (Entebbe.)

A. lycoa tirika, subsp.

Eltringham, Trans. Ent. Soc., p. 13, pl. 1, f. 6 (1911).

BRITISH E. AFRICA (Tiriki Hills).

A. lycoa fallax, subsp.

Rogenhofer (*Planema*), Ann. d. K. K. Naturhist. Hofmus, Wien. 6, p. 459, pl. 15, f. 6 (1891); Butler, Proc. Zool. Soc., p. 113 (1896); Aurivillius, Rhop. Aeth., p. 115 (1898); Poulton, Trans. Ent. Soc., p. 305, pl. 21, f. 1a, 2a (1906); Heron, Trans. Zool. Soc., xix, p. 147 (1909); Eltringham, Af. Mim. Butt., p. 47, pl. 3, f. 24, 25 (1910); Trans. Ent. Soc., p. 13, pl. 1, f. 7 (1911).

= *kilimandjara*, Oberthür, Etud. d'Ent. 17, p. 26, pl. 2, f. 17 (1893); Butler, Proc. Zool. Soc., p. 113 (1896); Poulton, Trans. Ent. Soc., p. 305 (1906).

GERMAN E. AFRICA (Mt. Kilimandjaro).

A. lycoa kenia, subsp.

Eltringham, Trans. Ent. Soc., p. 13, pl. 2, f. 7 (1911).

BRITISH E. AFRICA (Mt. Kenia, Kikuyu Escarpment).

A. lycoa aequalis, subsp.

Roth. and Jord., Novit. Zool., 12, p. 184 (1905); Eltringham, Trans. Ent. Soc., p. 13, pl. 1, f. 8, 9 (1911).

ABYSSINIA (L. Abassi, Dara R., Banka, Dereta Mts., Wonda).

A. lycoa lycoa. Pl. VI, f. 8 (larva).

♂. Exp. 58-60 mm.

F.-w. thinly scaled, translucent. Brownish sepia. Beyond cell a faint indication of a subapical band of three large paler spots the third of which is nearer margin than those above it. Similar indications of a pale patch in basal half of area 2, and beneath it of a smaller one in 1b. Costa, apex and hind-margin slightly darker.

H.-w. not quite so thinly scaled but still translucent, slightly darkened at base and along hind-margin, remainder of wing dull reddish ochreous. Nervures and rays well marked in dark brown.

Underside almost scaleless. H.-w. with a few black spots near base; one at base in 9, 1c, and 1b, one in 8, one in 7, two in cell the second small and just before origin of nervule 2, one in 1c, 1b, and 1a.

Head and thorax black with small white spots, abdomen black above with reddish ochreous lateral spots and segmental lines. Claws unequal.

♀. Expanse about 64 mm.

F.-w. rather thinly scaled with grey black. A subapical band of white beginning just beneath costa and continuous as far as nervule 5, beneath which in area 4 is a white spot of about the same width as the band but placed nearer margin so that its

inner edge is just under the outer edge of the band. A large white patch in basal half of area 2 and beneath its distal extremity a smaller white patch in 1b. H.-w. with a slight dusky suffusion at base, followed by a large white patch extending beyond cell and enclosed by a broad dusky marginal band inclined to tawny about anal angle.

Underside a replica of the upper but base of wing reddish tawny on which are black spots as in ♂ but usually rather more distinct.

A. lycoa media, subsp.

The male is distinguished by slightly heavier scaling and greater distinctness of the pale spots in f.-w. The ♀ has a darker ground-colour and a slightly smaller and more distinctly outlined white h.-w. patch.

A. lycoa bukoba, subsp.

♂. F.-w. dark olive brown. The spots reduced in size and pale ochreous. The band reduced to two quadrate spots in 5 and 6 well separated from the spot in 4. The patch in 2 well separated from the submarginal spot in 1b.

H.-w. basal patch ill defined, warm ochreous, followed by a dark hind-marginal border which is inwardly inclined to tawny.

♀. F.-w. with brown black ground-colour, spots white and well defined. H.-w. pale patch well defined and faintly yellow enclosed by a broad marginal border of tawny brown on which the nervules and rays are well marked.

A. lycoa entebbia, subsp.

♂. F.-w. dusky ochreous grey. Spots much reduced in size. H.-w. ground-colour much as in f.-w. and the pale patch but little developed.

♀. F.-w. ground-colour very dark, white spots smaller and more sharply defined than in *bukoba*. H.-w. patch small and very faintly yellow.

A. lycoa tirika, subsp.

♂. Resembles *entebbia* but f.-w. ground-colour is olive brown, the pale spots smaller and sharply defined. H.-w. patch large, pale ochreous, enclosed by a broad dark marginal border of tawny brown.

♀. With very dark f.-w. ground-colour, white spots small and very distinct h.-w. patch very small and distinctly yellow.

A. lycoa fallax, subsp.

♂. F.-w. nearly black in both sexes. Spots small, white in

♀ and ochreous in ♂. H.-w. patch rather larger than in previous forms and sharply defined.

A. lycoa kenia, subsp.

Both sexes smaller than in other forms. Ground-colour nearly black. H.-w. patch slightly edentate between nervules 3 and 4. Dark areas on underside smoky black. ♂ with spots and h.-w. patch lemon ochreous. ♀ h.-w. patch lemon ochreous, f.-w. spots white.

A. lycoa aequalis, subsp.

The sexes are similar. The f.-w. spots and h.-w. patch dull ochreous. H.-w. marginal border inclined to tawny.

The larva and pupa are described by Aurivillius (*l. c.*) the former being yellowish without markings and having a black head and black spines, the latter scarcely as long as the diameter of the body.

The pupa has the usual black markings, those of the abdomen enclosing pale centres and being irregularly angulated. Segments 2-4 each have a pair of short black dorsal spines, yellowish at their bases.

On Pl. VI, f. 8, I have figured an example of the larva taken by Mr. Lamborn near Lagos.

I have already (Trans. Ent. Soc., 1911) discussed at some length the variation which occurs in this species coincident with its geographical distribution. The depth of colour increases as we pass eastwards, whilst it is a remarkable fact that it exhibits constant sexual dimorphism until it reaches Abyssinia, where the ♀ becomes yellow spotted in the f.-w. as in the ♂. Forms intermediate between those here described are of course found on the overlapping areas of the districts to which each form is peculiar, but within those districts the forms are very constant. The species has lately been bred in very large numbers by Mr. W. A. Lamborn near Lagos. These series are now in the Oxford collection and show little or no variation.

131. *ACRAEA JOHNSTONI*. Pl. XIV, f. 5.

Acraea johnstoni, Godman, Proc. Zool. Soc., p. 537 (1885); Holland, Ann. Nat. Hist., p. 248 (1893); Butler, Proc. Zool. Soc., p. 113 (1896); Aurivillius, Rhop. Aeth., p. 114 (1898); Poulton, Trans. Ent. Soc., p. 300 (1906); Eltringham, Af. Mim. Butt., p. 47 (1910); Trans. Ent. Soc., p. 13 pl. 1, f. 12 (1911); pl. 2, f. 2, larva f. 6.

= *Planema telekiana*, Rogenhofer, Ann. d. K. K. Naturhist. Hofmus. Wien., p. 459, pl. 15, f. 4 (1891).

= *A. proteina semifulvescens*, Oberthür, Etud. d'Ent., 17, p. 26, pl. 2, f. 21 (1893); Butler, Proc. Zool. Soc., p. 113 (1896); Poulton, Trans. Ent. Soc., p. 302, pl. 22, f. 2a, pl. 21, f. 3a (1906); Eltringham, Af. Mim. Butt., p. 47, pl. 8, f. 13 (1910).

GERMAN E. AFRICA (Mt. Meru, Mt. Kilimandjaro, Usambara); BRITISH E. AFRICA (Taveta).

A. johnstoni f. *confusa*, Rogenhofer in Baumann, "Usambara" Suppl., p. 326 (1891); Ann. d. K. K. Natur. Hist. Hofmus. Wein., p. 459, pl. 15, f. 5 (1891); Aurivillius, Rhop. Aeth., p. 115 (1898); Eltringham, Trans. Ent. Soc., p. 14, pl. 1, f. 13, 15 (white var. f. 13), (1911).

= *johnstoni* ♀, Butler, Proc. Zool. Soc., p. 91 (1888).

= *proteina*, Oberthür, Etud. d'Ent., 17, p. 26, pl. 2, f. 14; Poulton, Trans. Ent. Soc., pl. 22, f. 1a, 1b (1906).

NYASSALAND; GERMAN E. AFRICA (Usambara, Kilimandjaro, Nguelo); RHODESIA (Chirinda); BRITISH E. AFRICA (Taita, Taveta, Kikuyu, Tiriki); UGANDA (Entebbe).

A. johnstoni f. *flavescens*, Oberthür (*proteina flavescens*), Etud. d'Ent., 17, p. 26, pl. 1, f. 4 (1893); Aurivillius, Rhop. Aeth., p. 115 (1898); Eltringham (f. *confusa* part), Trans. Ent. Soc., p. 14 (1911).

(Localities as f. *confusa*.)

A. johnstoni f. *semialbescens*, Oberthür (*proteina semialbescens*), Etud. d'Ent., 17, p. 26, pl. 3, f. 29 (1893); Aurivillius, Rhop. Aeth., p. 115 (1898); Eltringham (f. *confusa* part), Trans. Ent. Soc., p. 14 (1911).

NYASSALAND; GERMAN E. AFRICA (Mrogoro, Usambara).

A. johnstoni f. *fulvescens*, Oberthür (*proteina fulvescens*), Etud. d'Ent., p. 26, pl. 2, f. 21 (1893); Aurivillius, Rhop. Aeth., p. 114 (1898); Poulton, Trans. Ent. Soc., p. 304, pl. 21, f. 4a (1906); Eltringham, Af. Mim., p. 47, pl. 3, f. 26 (1910); Trans. Ent. Soc., p. 14, pl. 1, f. 11 (1911).

GERMAN E. AFRICA (Kilimandjaro, Nguelo); BRITISH E. AFRICA (Taita).

A. johnstoni f. *octobalia*, Karsch, Ent. Nachr., 20, p. 222 (1894); Aurivillius, Rhop. Aeth., p. 114 (1898); Eltringham, Trans. Ent. Soc., p. 15 (1911).

GERMAN E. AFRICA (Mpwapwa).

A. johnstoni butleri.

= *lycoa* ♀ var. Butler, Proc. Zool. Soc., p. 731 (1895).

= *lycoa* ab. *butleri*, Aurivillius, Rhop. Aeth., p. 115 (1898).

= *A. toruna*, Grose-Smith, Novit. Zool., 7, p. 546 (1900); Rhop. Exot., *Acraea*, 8, p. 27, pl. 8, f. 1 (1901); Poulton, Trans. Ent. Soc., p. 303, pl. 22, f. 3a (1906); Heron, Trans. Zool. Soc., xix, p. 148 (1909); Eltringham, Af. Mim. Butt., p. 47, pl. 3, f. 28 (1910); Trans. Ent. Soc., p. 15, pl. 1, f. 10 (1911).

GERMAN E. AFRICA (Urundi); UGANDA (Toro).

A. johnstoni johnstoni.

Expanse 58-60 mm. Pattern very unstable. F.-w. Base suffused with black to a varying extent. Following this suffusion is an irregular tawny orange area extending a little beyond the pale spots in areas 11, 10, 6, and 5, as far as the spot in 4, over the basal parts of 3 and 2, as far as the submarginal spot in 1b, and nearly as far as 1a. The spots referred to are pale pinkish ochreous and arranged as follows. A subapical series of three or four separated only by the nervules 10, subcostal, and 6. A submarginal spot in area 4, a large rounded spot in 2 touching 2, 3, and median, and a smaller spot near margin in 1b. Beyond these spots the apex and margin is brown black.

H.-w. white, slightly blackened at base, and having a broad black marginal border somewhat indented at area 4. This indentation gives the inner edge of the border an angulated appearance characteristic of *A. johnstoni* throughout its numerous forms.

Underside. F.-w. Resembles the upper, but the dark areas are replaced by ochreous grey, striated by the dark nervules and rays, and the whole pattern is paler and duller, the pale spots often almost devoid of scales.

H.-w. much as above but there are a few black spots close to base arranged for the most part as a basal and subbasal series, one in 9, 8, 7, and cell, two in 1c, 1b, and 1a. The central area less clear white than above, the marginal border ochreous grey, inwardly inclined to reddish brown.

Head and thorax black with a few white dots. Abdomen black above with orange lateral spots and whitish segmental lines. Claws unequal.

♀. Except that it is larger, one example before me having an expanse of 74 mm., the female resembles the ♂, or at least ♀ ♀ can be found which resemble the ♂. The species is so

extremely variable that it is not always easy to find two examples exactly alike.

A. johnstoni f. *confusa*.

F.-w. brown black. The pale spots as in typical form but white. H.-w. as in typical form but basal patch pale ochreous.

The ♀ resembles the ♂.

This is the commonest form of *A. johnstoni* and it is rather unfortunate that the previous form should have become the type since it is in reality a rather rare variety. A variety of the *confusa* form has the h.-w. basal patch white as well as the f.-w. spots. I have figured this form in Trans. Ent. Soc., pl. 1, f. 13 (1911).

A. johnstoni f. *flavescens*.

In this form the f.-w. spots are pale ochreous the same as the h.-w. patch.

A. johnstoni f. *semialbescens*.

The f.-w. spots are white and the h.-w. patch is tawny yellow.

A. johnstoni f. *fulvescens*.

The f.-w. is tawny yellow, the spots only a shade paler, and there is a blackish apical and hind-marginal border. The h.-w. is tawny yellow a little paler over the area which in *confusa* is pale ochreous. A more or less well-defined but narrow blackish hind-marginal border.

A. johnstoni f. *octobalia*.

The spots of f.-w. and basal patch of h.-w. are tawny yellow instead of white and pale ochreous.

A. johnstoni *butleri*, subsp.

Basal half of f.-w. purplish red with a slight blackish suffusion at base, beyond the red colour is a very irregular band of rather tawny yellow its inner edge comparatively straight as far as area 4, projecting sharply inwards in area 2, and continued as a submarginal patch in 1b and sometimes also in 1a. Below area 3 the outer edge of this band is often much suffused. Beyond the band the apex and hind margin are brown black. H.-w. basal patch white to dull pink followed by a broad blackish hind-marginal band.

The tawny yellow band in the f.-w. of this form is so variable in shape that it is not easy to find two examples alike.

The ♀ resembles the ♂, but may be rather larger and less richly coloured.

The larva of *A. johnstoni* has the body yellowish beneath and brownish black above, each segment with a ring of

yellowish white, edged with brown and divided in the middle by a dark brown line widened somewhat at the base of each of the papillae which carry the spines. Head black, and the first and last three segments somewhat darker than the remainder. Twenty-four dorsal black spines arranged in a double row. Eleven lateral spines on each side, the last two projecting backwards. Eight sublateral spines yellow on each side the first pair arising from the fourth segment.

I have already (Trans. Ent. Soc., 1906) entered rather fully into a discussion of the forms of this extremely variable species. I have slightly altered the list of references and synonymy from that given on the previous occasion and have separated out the form named *flavescens* by Oberthür, and also his *semialbescens* as they seem sufficiently different to stand as separate forms. Karsch's form *octobalia* I then knew only from a sketch I discovered at Oxford, but having now seen the actual specimen I find that the sketch is quite inaccurate, the form being as above described. In addition to the forms noted, intermediates of all kinds may be found in a long series. In Nyassaland Neave has lately found a form which resembles f. *semifulvescens*, but has the f.-w. spots brilliantly white instead of obsolescent. In Mr. Trimen's collection there is a ♀ from Naivasha (British E. Africa) which is of the black and white variety of the *confusa* form but has a trace of deep tawny yellow in the central area of the f.-w. In Mr. Joicey's collection there is a ♀ which has the f.-w. sepia, the outer part of areas 2, 3, 4, 5, and 6 tawny yellow, the spots a vivid white, the h.-w. basal patch tawny with the marginal border of a deeper shade and the margin dusted with brown.

In the general collection of the Berlin Museum there is a ♀ from Mpwapwa which has all the pale markings orange ochreous.

The larva which I figured (*l. c.*) was one of a company bred at Nguelo, Usambara, resulting in nine specimens which were of the following forms, 2 ♂♂ and 1 ♀ of the type form, 2 ♂♂ and 2 ♀♀ of f. *fulvescens*, one ♀ of the black and white variety of *confusa*, and one ♂ *confusa* with white f.-w. spots and pale ochreous h.-w. patch.

The species ranges from N. Rhodesia through German E. Africa to British E. Africa and Uganda, but no form seems peculiar to any particular district except *butleri*,

which, so far as I know, is only found in Urundi and Toro. At Chirinda only the form *confusa* seems to occur. A long series taken by Neave on Mt. Kokanjero (British E. Africa) contains a large number of intermediates between *fulvescens* and *semifulvescens*.

The two following species cannot be assigned to any of the foregoing groups, and present no special affinities.

132. *ACRAEA NIOBE*.

Acraea niobe, Em. M. B. Sharpe, Proc. Zool. Soc., p. 554 (1893);
Smith and Kirby, Rhop. Exot., *Acraea*, 5, p. 18, pl. 5, f. 10
(1894); Aurivillius, Rhop. Aeth., p. 92 (1898).

SÃO THOMÉ.

♂. Expanse 60 mm.

F.-w. Thinly scaled, elongated, more or less translucent. Brown-black. Base, costa, apical and hind-marginal borders darker. Large rounded black spots as follows. One in cell over origin of nervule 2, one at end of cell. A subapical row of three contiguous spots in 6, 5, and 4, followed by a spot in 3 more proximally placed. One at base of area 2, and beneath it but nearer margin a spot in 1b, and in the same area a subbasal spot against median, midway between base and origin of 2.

H.-w. thinly scaled, brown black, rather darker at base and having a narrow black border, widest in areas 2 and 1c. Black spots as on underside.

Underside. F.-w. almost scaleless except on spots which are as on upperside.

H.-w. as above. Black spots as follows. An outer row of nine, the first three in 7, 6, and 5, small and parallel to apical margin. The fourth in 4 rather more proximal, the fifth larger, a short distance from base of area 3, sixth large, at base of area 2, followed by a large spot in 1c and 1b all in a straight line at right angles to inner margin, ninth very small in 1a. In addition to these a small subbasal in 7, two spots in cell, the second very large, a large spot on discocellulars, a basal and a subbasal in 1c and 1b and an additional spot in 1a.

Head black with a crimson collar. Thorax black above. Basal half of abdomen black above with red lateral spots. Distal half crimson. Claws unequal.

♀ at present unknown.

This interesting species is only found on the Island of São Thomé. It is quite unlike any other known form. The figure in Rhop. Exot. seems scarcely black enough, the spots having in reality a somewhat velvety appearance. I have examined two ♂♂ in the Staudinger collection. These and the type in the Lisbon Museum are the only examples known to me.

133. *ACRAEA INSULARIS.*

Acræa insularis, Em. M. B. Sharpe, Proc. Zool. Soc., p. 555 (1893); Smith and Kirby, Rhop. Exot., *Acræa*, 5, p. 16, pl. 5, ff. 6, 7 (1894); Aurivillius, Rhop. Aeth., p. 112 (1898).

SÃO THOMÉ.

♂. Exp. 48 mm.

F.-w. black brown. In cell, just before origin of nervule 2, a yellow transverse spot traversing the whole width of cell. Just before end of cell a broad orange quadrate patch contiguous with a large orange spot at base of area 2, and beneath the latter a crescentic orange spot in 1b nearer margin. Two small orange subapical spots separated by nervule 6, and beneath these but rather nearer margin a smaller spot in area 4. In the transverse area between the spots the ground-colour is somewhat darker.

H.-w. with a dark basal suffusion followed by a yellow patch outwardly shading into orange. A dark brown marginal border, its inner edge traversing the wing almost perpendicularly as far as nervule 4, where it bends sharply inwards to inner margin. Black spots as on underside.

Underside. F.-w. much as above but spots pale ochreous dusted with reddish, and ground-colour somewhat paler with dark streaks in cell and areas 6, 4, and 1b.

H.-w. pale greenish grey with a brown border as on upper-side but outwardly bounded by a paler marginal line. Black spots as follows. One in 9 at base, two in 7 rather close together the second just beyond origin of nervule 7, three discal spots in 5, 4, and 3 the middle one larger and more proximal. Two in cell and two on discocellulars, a basal, a subbasal and a distal in 1c, two distal spots in 1b, and a subbasal in 1a.

Head, thorax and abdomen black.

I have not had an opportunity of examining the type of this species which is in the Lisbon Museum. As Prof. Aurivillius has noted (*l. c.*) its true affinity is obscure. It does not resemble any other species with which I am acquainted.

SUPPLEMENT ON THE ORIENTAL SPECIES
OF *ACRAEA*.

KEY. (Applying to both sexes.)

- F.-w. more or less transparent (a)
 F.-w. fully scaled (g)
 (a) F.-w. with numerous blackish spots (b)
 F.-w. without spots, or at most with a dark mark at end of
 cell (c)
 (b) H.-w. black spots but little confluent *andromache*
andromache (346)
 H.-w. black spots tending to coalesce and form a patch
andromache f. *oenone* (347)
 H.-w. black spots very confluent and forming a black basal
 patch *andromache sanderi* (347)
 (c) Submarginal spots of h.-w. underside orange colour . . . (d)
 Submarginal spots of h.-w. underside ochreous . . . (e)
 (d) H.-w. cell on underside nearly devoid of scales
moluccana parce (348)
 H.-w. cell on underside almost entirely scaled with black
moluccana buruensis (348)
 (e) H.-w. upperside with a broad discal orange band
moluccana meyeri (348)
 H.-w. upperside without a discal orange band (f)
 (f) H.-w. upperside with a continuous, or almost continuous, whitish
 band *moluccana dohertyi* (348)
 H.-w. upperside with broken white band or only an inner
 marginal pale patch *moluccana moluccana* (347)
 (g) H.-w. beneath with basal black spots enclosing or tending to
 enclose pale markings *violae* (348)
 H.-w. beneath without basal spots or markings . . . *vesta* (349)

1. *ACRAEA ANDROMACHE*.

Acraea andromache, Fabricius (*Pap. andromacha**), Syst. Ent., p. 466 (1775); Schmeltz, Verh. Zool. bot. Gesell. Wien., p. 593 (1866); Butler, Ann. Mag. Nat. Hist., 4, v. p. 361 (1870); Schmeltz, Verh. Ver. Hamburg, ii, p. 186 (1876); In Journ. Mus. Godeffroy, xii, p. 174 (1877); Staudinger, Exot. Schmett., p. 85, pl. 33 (1885); Olliff (metam.), Ann. Mag. Nat. Hist. 6, 1, p. 359 (1888); Mathew (metam.), Trans. Ent. Soc., p. 143, pl. VI, f. 14, 14a (1888); Fruhstorfer, Stettin Ent. Zeit., 68, 1, p. 21 (1907).

* I have not hesitated to alter the last letter of the name. It is printed *andromacha* in Syst. Ent., but there can be little doubt that it is a misprint for *andromache*.

= *A. entoria*, Godart, Enc. Méth., ix, p. 231 (1819).

= *andromache* f. *indica*, Röber, Iris, 2, p. 22 (1885); Fruhstorfer, Stettin Ent. Zeit., 68, 1, p. 21 (1907) (Kabia I.).

N. AUSTRALIA (Pt. Darwin, Cooktown, Rockingham Bay, Pt. Denison, Moreton Bay, Toowoomba); FLORES I.; SEMAO I.; LOYALTY IS.; ESPIRITU SANTO; NEW CALEDONIA; FIJI; MANGO; SAMOA (Oinainisa); SUMBA; LETTI; TOEKAN; SERMATTI; MOA; KABIA; NEW HEBRIDES (Malekula); FERGUSSON I.

f. *oenone*, Kirby, Ann. Mag. Nat. Hist., 6, iv, p. 163 (1839); Allen's Nat. Lib., Butt., vol. i, p. 36, pl. 37, f. 3 (1894).

EUST I.; ST. AIGNAN; MEKEO; BRITISH NEW GUINEA.

A. andromache subsp. *sanderi*, Rothschild, Ann. Mag., Nat. Hist., 6, 12, p. 455 (1893); Fruhstorfer, Stettin Ent. Zeit., 68, 1, p. 21 (1907).

= var. *agema* Fruhstorfer, Stettin Ent. Zeit., 68, 1, p. 21 (1907).

NEW GUINEA; ? WAIGEU.

I cannot separate the form *indica* from other examples of the species. Röber states that it is smaller than the Australian examples, but in a long series the size varies greatly and this character is of little value. Kirby's *oenone* is merely an intermediate between typical *andromache* and *andromache sanderi*. The figure in Allen's Naturalist's Library (*l.c.*) shows the ground-colour of the h.-w. too yellow. The male armature of *A. andromache* is barely distinguishable from that of *A. igati*.

2. ACRAEA MOLUCCANA.

Acraea moluccana, Felder, Sitz. Akad. Wiss. Wien. Math. Nat. Cl. xl, p. 449 (1860); Fruhstorfer, Stettin Ent. Zeit., 68, 1, p. 20 (1907).

AMBOINA.

= *nebulosa*, Hewitson, Exot. Butt. (*Acraea*), pl. 2, f. 13 (1861).

CERAM.

= *fumigata*, Honrath, Berlin Ent. Zeit., xxx, p. 130, pl. 4, f. 3 (1886); Hagen, Jahrb. d. nass. Ver. f. Naturk. (Wiesbaden), p. 82 (1897); Ribbe, Iris, p. 109 (1898); Fruhstorfer, Stettin Ent. Zeit., 68, 1, p. 20 (1907).

NEW BRITAIN.

= *pollonia*, Godman and Salvin, Ann. Mag. Nat. Hist., p. 110 (1888); Gr.-Smith, Rhop. Exot., i, f. 1, 2 (1889); Fruhstorfer, Stettin Ent. Zeit., 68, 1, p. 20 (1907).

GUADALCANAR, SHORTLAND I.

= *moluccana pella*, Fruhstorfer, Stettin Ent. Zeit. 68, 1, p. 19 (1907).

WOODLARK I.

A. moluccana meyeri, subsp.

Kirsch, Mitt. Mus. Dresden, p. 123, pl. 6, f. 2 (1877); Fruhstorfer, Stettin Ent. Zeit., 68, 1, p. 20 (1907).

NEW GUINEA.

A. moluccana dohertyi, subsp.

Holland, Proc. Boston Soc., xxv, p. 61, pl. 5, f. 7 (1891); Rothschild, Iris, v, p. 435 (1892); Fruhstorfer, Stettin Ent. Zeit., 68, 1, p. 19 (1907).

CELEBES.

A. moluccana parce, subsp.

Staudinger, Iris, 9, p. 193, pl. 1, f. 8 (1896); Fruhstorfer, Stettin Ent. Zeit., 68, 1, p. 19 (1907).

XULLA Is. (Mangola).

A. moluccana buruensis, subsp.

Rothschild, Novit. Zool., vi, p. 68 (1899).

BURU.

I cannot find any satisfactory means of distinguishing between the forms which I have here made synonymous. Fruhstorfer (*l. c.*) gives several points of difference between his subsp. *pella* and *pollonia*, but these do not remain constant in a series. Holland's *dohertyi* is perhaps rather more entitled to subspecific rank, though I have not yet examined a large number of examples. *Parce* and *buruensis* may easily be distinguished by the very black h.-w. *Meyeri* with its velvety black wings and rich orange band is very distinct in appearance though I cannot regard it as a separate species. All the forms which I have included under *A. moluccana* exhibit a beautiful greenish blue iridescence on the underside of the f.-w. This is produced in a peculiar manner. The iridescence is really on the underside of the scales which are on the upper surface of the wing, and is seen through the transparent wing membrane. The effect is more brilliant in *moluccana meyeri* than in the other forms. The male armatures of these forms are similar and are of the same type as that of *A. admatha*. The ♀ plate is like that of *A. neobule*, and the opening of the *bursa copulatrix* is eccentric.

ACRAEA VIOLAE.

Acraea violae, Fabricius (*Pap.*), Syst. Ent., p. 460 (1775); Sulzer, Gesch. Iris (*cepheus*), pl. 15, f. 2, p. 143 (1776); Goetze, Entom. Beytr., 3, 1, p. 97 (*cepheus*) (1779); Horsfield, (metam.), Cat.

Lep. E.I.C., pl. 8, f. 2, 2a (1829); Doubleday, Hew. & Westw., Gen. Di. Lep., p. 142 (1848); Moore, Cat. Lep. Mus., E.I.C. (metam.) p. 135, pl. 5, f. 1, 1a (1857); Chaumette, Ent. Mo. Mag., p. 37 (1865); Butler, Cat. Fabr. Lep. in B.M., p. 131 (1869); Moore, Lep. Ceyl. (metam.) 1, p. 66, pl. 33, f. 1, 1a, 1b (1881); Marshall & de Nicéville, Butt. Ind., 1, p. 320, fig. ♂, (1883); de Nicéville, Journ. As. Soc. Bengal, p. 43 (1885); Swinhoe, Proc. Zool. Soc., p. 127 (1885); Proc. Zool. Soc., p. 424 (1886); Aitken, Journ. Bomb. Nat. Hist. Soc., p. 129 (1886); Hampson, Journ. As. Soc. Bengal, p. 352 (1888); Davidson & Aitken, Journ. Bomb. Nat. Hist. Soc., v, p. 268 (1890); Fergusson, Journ. As. Soc. Bengal, p. 7 (1891); Swinhoe, Trans. Ent. Soc., p. 276 (1893); de Nicéville, Sikkim Gazetteer, p. 131 (1894); Davidson & Aitken, Journ. Bomb. Nat. Hist. Soc., p. 246 (1896); Moore, Lep. Ind., v (metam.), p. 36, pl. 388, f. 1-1g (1901-1903); Suffert (*viola*), Iris, p. 34 (1904); Bingham, Faun. Brit. Ind. Butt., i, p. 471, f. 85 (1905).

= *Pap. cephea*, Cramer, Pap. Exot., iv, pl. 298, f. D. E (1782).

= *Tel. cephea*, Hühner, Verz. bek. Schmett., p. 27 (1816).

CEYLON; MADRAS; MYSORE; NILGHERRIES; BERHAMPORE; BOMBAY; DARJEELING; N. W. PROVINCES.

This species is quite easily recognised by its orange ground-colour and numerous black spots. Suffert's suggestion (*l.c.*) that it has been taken in German East Africa is not confirmed.

ACRAEA VESTA.

Acraea vesta, Fabricius (*Pap.*), Mant. Ins., ii, p. 14 (1787); Donovan, Ins. China, pl. 30, f. 1 (1799); Godart, Encycl. Méth. ix, p. 233 (1819); Doubleday, Hew. & Westw., Gen. Di. Lep. (*Pareba*), p. 142 (1846-50); Butler, Cat. Fabr. Lep. in B.M., p. 132 (1869); Graham Young, Proc. Zool. Soc., p. 243 (1882); Marshall & de Nicéville, Butt. Ind. 1, p. 318 (1883); Staudinger, Exot. Schmett., p. 85, pl. 33 (1885); Doherty, Journ. As. Soc. Bengal, p. 114 (1886); Elwes, Trans. Ent. Soc., p. 334 (1888); Manders, Trans. Ent. Soc., p. 520 (1890); Leech, Butt. fr. China, etc., 1, p. 14 (1892); de Nicéville, Sikkim Gazetteer, p. 131 (1894); Watson, Journ. Bomb. Nat. Hist. Soc., p. 652 (1897); Leech, Trans. Ent. Soc., p. 104 (1899); Johannis, Bull. Sci. Fr. et Belg., p. 325 (1901); Moore, Lep. Ind., v. (metam.), p. 31, pl. 387, f. 1, 1a-1f (1901); Bingham, Faun. Brit. Ind. Butt. i, p. 469, f. 84 (1905); Fruhstorfer Wiener. Ent. Zeit., p. 308 (1906).

= *terpsichore*, Cramer, (*nec* Linn.) Pap. Exot., iv, pl. 298, f. A-C (1782).

= *issoria*, Hübner, Verzeich. bek. Schmett., p. 27 (1816).

= *anomala*, Kollar, in Hügel's Kaschmir, iv, 2, p. 425, pl. 3, f. 3, 4 (1848); Staudinger, Exot. Schmett., p. 85 (1885).

N. INDIA; ASSAM; BURMAH; W. and S. CHINA.

A. vesta f. *vestalina*, Fruhstorfer, Wiener, Ent. Zeit., p. 308 (1906).
S. ANNAM.

[F.-w. dusky with spots whitish, h.-w. with broad dark border.]

A. vesta vestita, subsp.

de Nicéville, Journ. As. Soc. Bengal, lxiv, p. 397 (1895); Moore, Lep. Ind., v, p. 35 (1901); Fruhstorfer, Wiener Ent. Zeit., p. 309 (1906).

= *vesta*, Snellen van Vollenhoven, Midden-Sumatra, p. 13, pl. 2, f. 3-5 (1892).

N.E. SUMATRA.

[Small. ♂ with broad dusky border in both wings, nervules black. ♀ F.-w. dusky with pale spots, h.-w. with broad dusky marginal border.]

A. vesta vestita f. *alticola*, Fruhstorfer, Wiener Ent. Zeit., p. 309 (1906).

W. SUMATRA.

[Intermediate to *vesta vestoides*.]

A. vesta vestoides, subsp.

Moore (*Pareba*), Lep. Ind., v, p. 35 (1901); Fruhstorfer, Wiener Ent. Zeit., p. 308, 309 (1906).

= *vesta*, Horsfield, Cat. Lep. Mus. E.I.C., pl. 3, f. 21 (larva) (1829).

W. JAVA.

[Small. ♂ usually with dark spots in f.-w. cell and discal area. H.-w. with reddish submarginal band of underside showing through to upper surface. Marginal pale spots well marked in both wings. All nervules black. ♀ F.-w. with dark colour predominating. H.-w. with nervules heavily marked, dark border broad, and usually with reddish ochreous internervular patches towards anal angle. Examples from E. Java are often without spots in f.-w.]

I see no reason for separating *A. vesta* from other *Acraeas* and making it a separate genus (*Pareba*). It appears to be closely allied to *A. anacreon*, and the stalked condition of nervules 6 and 7 in the h.-w. is not constant. The size, pattern, and ground-colour are extremely variable. Both wings occasionally have discal spots, and these when present in the h.-w. are suggestive of the

characteristic arrangement seen in *anacreon*. Both ♂ and ♀ genitalia are very similar to those of the African species. Careful examination of long series might disclose the existence of other local races in addition to the Javan and Sumatran forms above described, though judging from the variability exhibited by some seventy-five examples now before me, instability of pattern would seem to be the most constant characteristic.

LIST OF TYPES.

LIST OF AFRICAN SPECIES AND FORMS OF *ACRAEA* WITH LOCATION OF TYPES WHERE KNOWN.

Explanation of references.

London	= British Museum of Natural History, South Kensington, London.
Oxford	= Hope Department, University Museum, Oxford.
Tring	= The Private Museum of the Hon. W. Rothschild, Tring, England.
Berlin	= Kgl. Museum für Naturkunde, Berlin.
Vienna	= K. K. Naturhistorisches Hofmuseum, Vienna.
Brussels	= Musée Royal d'Histoire Naturelle de Belgique, Brussels.
Cape Town	= South African Museum, Cape Town.
Stockholm	= Naturhistoriska Riksmuseum, Stockholm.
Upsala	= Kgl. Universitetets Zoologiska Museum, Upsala.
Lisbon	= Museu Nacional de Lisboa, Lisbon.
Edinburgh	= Museum of Science and Art, Edinburgh.
Frankfurt	= Senckenbergisches Museum, Frankfurt a. M.
Washington	= United States National Museum, Washington.
Genoa	= Museo Civico di Storia Naturale, Genoa.
S. Fiel	= Museu Collegio de S. Fiel, Portugal.
Pietermaritzburg	= Natal Museum, Pietermaritzburg.

(Drury's collection was sold about a hundred years ago and his types have become dispersed.)

<i>A. acerata</i> , Hew.	. London.	<i>f. aquilina</i> ,	Berlin.
<i>f. vinidia</i> , Hew.	. London.	Strand	
<i>f. brahmsi</i> , Suff.	. Coll. Suffert.	<i>f. nyassicola</i> ,	Berlin.
<i>f. diarina</i> , Suff.	. Berlin.	Strand	
subsp. <i>tenella</i> ,	Vienna.	subsp. <i>pudorina</i> ,	Berlin.
Rogenh.		Staud.	
<i>A. acrita</i> , Hew.	. London.	<i>f. utengulensis</i> ,	Berlin.
<i>f. msamviae</i> ,	Berlin.	Thur.	
Strand		subsp. <i>littoralis</i> , Eltr.	Tring.

<i>f. aquilia</i> , Thur.	Berlin.	<i>A. asbologlintha</i> ,	Berlin.
<i>f. chaeribulula</i> ,	Berlin.	Karsch	
Strand		subsp. <i>rubescens</i> ,	Oxford.
<i>f. usaramensis</i> ,	Berlin.	Trim.	
Strand		<i>A. asema</i> , Hew.	London
subsp. <i>manca</i> ,	Berlin.	<i>f. gracilis</i> , Wichgr.	Coll. Wich-
Thur.		graf.	
<i>f. lindica</i> , Strand	Berlin.	<i>A. atergatis</i> , Westw.	Oxford.
subsp. <i>ambigua</i> ,	Coll. Trimen.	<i>A. atolmis</i> , Westw.	Oxford.
Trim.		<i>f. decora</i> , Weymer	Coll. Wey-
<i>f. bella</i> , Weymer	Coll. Weymer.	mer.	
subsp. <i>bellona</i> ,		<i>A. aureola</i> , Eltr.	Tring.
Weymer.		<i>A. aubyni</i> , Eltr.	Oxford.
<i>A. admatha</i> , Hew.	London.	<i>A. axina</i> , Westw.	Oxford.
<i>f. leucographa</i> ,	Berlin.	<i>A. baxteri</i> , Sharpe	Coll. Joicey.
Ribbe		<i>f. fulleborni</i> ,	Berlin.
<i>A. aglaonice</i> , Westw.	Oxford.	Thur.	
<i>A. alciope</i> , Hew.	London.	<i>f. subsquamia</i> ,	Berlin.
♀ <i>f. macarina</i> ,	London.	Thur.	
Butl.		<i>A. bonasia</i> , Fab.	London.
♀ <i>f. cretacea</i> , Eltr.	Oxford.	♀ <i>f. cynthius</i> ,	
♀ <i>f. fumida</i> , Eltr.	Oxford.	Drur.	
♀ <i>f. aurivillii</i> ,	Berlin.	♀ <i>f. praeponina</i> ,	Berlin.
Staud.		Staud.	
♀ <i>f. tella</i> , Eltr.	Oxford.	♀ <i>f. siabona</i> , Suff.	Berlin.
subsp. <i>schecana</i> ,	Tring	subsp. <i>alicia</i> ,	Coll. Jackson.
R. and J.		Sharpe	
<i>A. althoffi</i> , Dewitz	Berlin.	♀ <i>f. cabiroides</i> ,	Oxford.
<i>f. rubrofasciata</i> ,	Brussels.	Poulton	
Auriv.		♀ <i>f. teneollides</i> ,	Oxford.
♀ <i>f. telloides</i> , Eltr.	Oxford.	Poulton	
♀ <i>f. drucei</i> , Eltr.	Coll. Druce.	subsp. <i>banka</i> , Eltr.	Oxford.
♀ <i>f. ochreata</i> , Eltr.	Oxford.	<i>A. braesia</i> , Godm.	London.
subsp. <i>pseudepaea</i> ,	Coll. Dud-	<i>f. regalis</i> , Oberth.	Coll. Ober-
Dudgeon	geon.	thür.	
<i>A. amicitiae</i> , Heron	London.	<i>A. buschbecki</i> , Dew.	Berlin.
<i>A. anacreon</i> , Trimen	Coll. Trimen.	<i>A. büttneri</i> , Rogenh.	Vienna.
subsp. <i>bomba</i> , Gr.-	Coll. Joicey.	<i>A. cabira</i> , Hopff.	Berlin.
Smith		<i>f. apecida</i> , Oberth.	Coll. Ober-
<i>f. induna</i> , Trim.	Cape Town.	thür.	
subsp. <i>anacreontica</i> ,	Tring.	<i>f. abrupta</i> , Grün-	Berlin.
Gr.-Smith		berg.	
subsp. <i>speciosa</i> ,	Coll. Wich-	<i>f. natalensis</i> , Staud.	Berlin.
Wichgr.	graf.	<i>f. karschi</i> , Auriv.	Berlin.
<i>A. anemosa</i> , Hew.	London.	<i>f. biraca</i> , Suff.	Berlin.
<i>f. arcticincta</i> , Butl.	London.	<i>A. caecilia</i> , Fabr.	London.
<i>f. interrupta</i> , Thur.	Berlin.	♀ <i>f. hypatia</i> , Drur.	
<i>f. mosana</i> , Suff.	Berlin.	♀ <i>f. artemisa</i> ,	
<i>f. dubiosa</i> , Suff.	Coll. Suffert.	Stoll	
<i>f. ufipana</i> , Strand	Berlin.	subsp. <i>pudora</i> ,	Stockholm.
<i>f. urungensis</i> ,	Berlin.	Auriv.	
Strand		<i>f. umbrina</i> , Auriv.	Stockholm.
<i>A. ansorgei</i> , Gr.-	Tring.	<i>A. caldarena</i> , Hew.	London.
Smith		♀ <i>f. nero</i> , Butl.	London.

<i>f. neluska</i> , Oberth. Coll. Oberthür.	<i>f. sganzini</i> , Boisd. Coll. Oberthür.
<i>A. camaena</i> , Drur.	<i>f. lycia</i> , Fab. . London.
<i>A. cepheus</i> , Linn.	<i>f. necoda</i> , Hew. . London.
<i>f. abdera</i> , Hew. . London.	<i>f. दौरα</i> , Godm. . London.
<i>f. eginopsis</i> , Auriv. Stockholm.	<i>f. radiata</i> , Auriv. Stockholm.
♀ <i>f. sucepha</i> , Berlin.	<i>A. esebria</i> , Hew. . London.
Suff.	<i>f. protea</i> , Trim. . CapeTown(?).
♀ <i>f. nigrescens</i> , Tring.	<i>f. pseudoprotea</i> , London.
Eltr.	Butl.
<i>A. cerasa</i> , Hew. . London.	♀ <i>f. amphiprotea</i> , London.
<i>A. cerita</i> , Sharpe . Coll. Joicey.	Butl.
<i>A. chaeribula</i> , Coll. Oberthür.	♀ <i>f. metaprotea</i> , London.
<i>A. chambezi</i> , Neave . London.	Butl.
<i>A. chilo</i> , Godm. . London.	<i>f. jacksoni</i> , Sharpe Coll. Jackson.
♀ <i>f. hoeneli</i> , Holl. Washington.	<i>f. monteironis</i> , London.
<i>A. cinerea</i> , Neave . Oxford.	Butl.
subsp. <i>alberta</i> , . Tring.	<i>f. nubilata</i> , Eltr. . Oxford.
Eltr.	<i>f. ertli</i> , Auriv. . Coll. Ertl.
<i>A. circeis</i> , Drur.	subsp. <i>masaris</i> , . Coll. Oberthür.
<i>A. conjuncta</i> , Gr.-Smith Tring.	Oberth.
<i>f. interrupta</i> , Eltr. London.	<i>A. equatorialis</i> , Oxford.
♀ <i>f. silacea</i> , Eltr. London.	Neave
♀ <i>f. mutata</i> , Eltr. London.	subsp. <i>anaemia</i> , Oxford.
♀ <i>f. pica</i> , Eltr. . London.	Eltr.
♀ <i>f. lutealba</i> , Eltr. London.	<i>A. excelsior</i> , Sharpe . Coll. Jackson.
♀ <i>f. suffusa</i> , Eltr. London.	<i>A. eugenia</i> , Karsch . Berlin.
<i>A. conradti</i> , Oberth. Coll. Oberthür.	<i>A. fornax</i> , Butl. . London.
<i>A. damii</i> , Vollenh.	<i>A. goetzi</i> , Thur. . Berlin.
subsp. <i>cava</i> , Gr.-Smith Coll. Joicey.	<i>A. guillemei</i> , Oberth. Coll. Oberthür.
<i>f. nidama</i> , Suff. . Berlin.	<i>A. grosvenori</i> , Eltr. . Tring.
<i>A. diogenes</i> , Suff. . Berlin.	<i>A. hova</i> , Boisd. . Coll. Oberthür.
<i>A. disjuncta</i> , Gr.-Smith Tring.	<i>A. horta</i> , Linn. . Upsala.
<i>A. doubledayi</i> , Guérin London.	<i>A. igola</i> , Trim. . Coll. d'Agui-lar.
subsp. <i>sykesi</i> , Tring.	♀ <i>f. maculiventris</i> , Coll. Joicey.
Sharpe	Gr.-Smith
subsp. <i>arabica</i> , Tring.	<i>A. igati</i> , Boisd. . Coll. Oberthür.
Eltr.	<i>A. insignis</i> , Dist.
<i>A. egina</i> , Cram.	<i>f. signina</i> , Suff. . Coll. Suffert.
<i>f. harrisoni</i> , Coll. Harri-son.	<i>A. insularis</i> , Sharpe . Lisbon.
subsp. <i>areca</i> , Mab.	<i>A. intermedia</i> , . Coll. Wichgraf.
subsp. <i>medea</i> , Cram.	<i>A. iturina</i> , Gr.-Sm. Coll. Joicey.
<i>A. ella</i> , Eltr. . . Tring.	subsp. <i>kakana</i> , London.
<i>A. encedon</i> , Linn.	Eltr.
<i>f. infuscata</i> , Staud. Berlin.	<i>A. jodutta</i> , Fabr.
<i>f. alcippina</i> , Stockholm.	♀ <i>f. carmentis</i> , London.
Auriv.	Doubl.
	♀ <i>f. dorotheae</i> , Tring.
	Sharpe.

- ♀ *f. interjecta*, Oxford.
 Eltr.
 ♀ *f. subfulva*, Oxford.
 Eltr.
 ♀ *f. castanea*, Oxford.
 Eltr.
 ♀ *f. inaurata*, London.
 Eltr.
 subsp. *aethiops*, Tring.
 R. and J.
A. johnstoni, Godm. London.
f. confusa, Rogenh. Vienna.
f. flavescens, Oberth. Coll. Ober-
 thür.
f. semialbescens, Coll. Ober-
 Oberth. thür.
f. fulvescens, Coll. Ober-
 Oberth. thür.
f. octobalia, Karsch Berlin.
 subsp. *butleri*, Coll. Joicey.
 Gr.-Sm.
A. kraka, Auriv. Stockholm.
A. leucopyga, Auriv. Stockholm.
A. lia, Mab. Coll. Mabil-
 le.
 (?)
A. lualabae, Neave London.
A. lumiri, B.-Bak. Coll. Powell
 Cotton.
A. lycoa, Godt. Edinburgh (?)
 subsp. *media*, Eltr. Tring.
 subsp. *bukoba*, Tring.
 Eltr.
 subsp. *entebbia*, Tring.
 Eltr.
 subsp. *tirika*, Eltr. Oxford.
 „ *fallax*, Vienna.
 Rogenh.
 subsp. *kenia*, Eltr. Oxford.
A. machequena, Gr.- Coll. Joicey.
 Sm.
A. mahela, Boisd. Coll. Ober-
 thür.
A. mairessei, Auriv. Brussels.
f. dewitzi, Auriv. Berlin.
A. mansya, Eltr. Oxford.
A. masamba, Ward Coll. Ober-
 thür.
f. silia, Mab. Coll. Mabil-
 le.
 (?)
 ♀ *f. boseae*, Saalm. Frankfurt.
A. marnois, Rogenh. Vienna.
A. melanoxantha, Coll. Jackson.
 Sharpe
A. mima, Neave London.
- A. mirabilis*, Butl. London.
A. mirifica, Lathy Coll. Adams.
A. natalica, Boisd. Coll. Ober-
 thür.
f. umbrata, Suff. Coll. Suffert.
 subsp. *pseudegina*,
 Westw.
 subsp. *abadima*, Berlin.
 Ribbe
A. neobule, Doubl. London.
f. sokotrana, Rebel Vienna.
 subsp. *seis*, Feisth. Coll. Ober-
 thür.
 subsp. *arabica*, Tring.
 Rebel
A. newtoni, Sharpe Lisbon.
A. niobe, Sharpe Lisbon.
A. nohara, Boisd. Coll. Ober-
 thür.
 subsp. *halali*, Mar- Pieter-
 shall maritzburg.
 subsp. *pseudatol-* Oxford.
mis, Eltr.
 subsp. *punctellata*, Oxford.
 Eltr.
A. obeira, Hew. London.
 subsp. *burni*, Butl. London.
A. oberthüri, Butl. London.
f. confluentis, Suff. Berlin.
A. oncaea, Hopff. Berlin.
 ♂ *f. caoncius*, Suff. Coll. Suffert.
 ♀ *f. alboradiata*, Coll. Suffert.
 Suff.
 ♀ *f. modesta*, Berlin.
 Suff.
 ♀ *f. obscura*, Suff. Berlin.
 ♀ *f. defasciata*, Berlin.
 Suff.
 subsp. *liacea*, Suff. Berlin.
A. onerata, Trim. Cape Town.
A. omrora, Trim. Coll. Trimen.
 subsp. *umbrata*, Coll. Wich-
 Wichgr. graf.
A. oreas, Sharpe Coll. Jackson.
f. albimaculata, Oxford.
 Neave
f. angolanus, Coll. Adams.
 Lathy.
A. orestis, Hew. London.
f. humilis, Sharpe Coll. Jackson.
f. transita, Eltr. Oxford.
A. orina, Hew. London.
f. nigroapicalis, Stockholm.
 Auriv.

<i>f. orinata</i> , Oberth. Coll. Oberthür.	<i>f. nia</i> , Strand . Berlin.
subsp. <i>orineta</i> , Oxford.	subsp. <i>vuilloti</i> , Mab. Coll. Mabile.
Eltr.	subsp. <i>rhodina</i> , Tring.
<i>A. oscari</i> , R. and J. . Tring.	Roth.
<i>A. parthasia</i> , Fabr. . London.	<i>A. pseudolycia</i> , Butl. London.
♀ <i>f. oppidia</i> , Hew. London.	<i>f. astrigera</i> , Butl. London.
♀ <i>f. parrhoppidia</i> , Berlin.	♀ <i>f. emini</i> , Weym. Coll. Richelmann.
Staud.	<i>f. brunnea</i> , Eltr. Tring.
♀ <i>f. leona</i> , Staud. Berlin.	<i>A. pudorella</i> , Auriv. Stockholm.
<i>A. pelopeia</i> , Staud. . Berlin.	subsp. <i>detecta</i> , London.
<i>A. peneleos</i> , Ward. . Coll. Oberthür.	Neave
♀ <i>f. helvimaculata</i> , Oxford.	<i>A. quirina</i> , Fab. . London.
Eltr.	subsp. <i>rosa</i> , Eltr. . Oxford.
♀ <i>f. lactimaculata</i> , Tring.	<i>A. quirinalis</i> Gr.-Sm. Coll. Joicey.
Eltr.	<i>A. rabbaiae</i> , Ward . Coll. Oberthür.
♀ <i>f. sepia</i> , Eltr. . Oxford.	subsp. <i>mombasae</i> , Coll. Joicey.
subsp. <i>gelonica</i> , Tring.	Gr.-Sm.
R. and J.	<i>A. rahira</i> , Boisd. . Coll. Oberthür.
<i>A. penelope</i> , Staud. . Berlin.	<i>A. ranavalona</i> , Boisd. Coll. Oberthür.
♀ <i>f. argentea</i> . Oxford.	<i>f. maransetra</i> , Coll. Oberthür.
♀ <i>f. exalbescens</i> . Oxford.	Ward
♀ <i>f. penella</i> . Tring.	♀ <i>f. manandaza</i> , Coll. Oberthür.
subsp. <i>vitrea</i> , Eltr. Oxford.	Ward
subsp. <i>derubescens</i> , Berlin.	<i>A. rhodesiana</i> , Coll. Wichgraf.
Eltr.	Wichgr.
subsp. <i>translucida</i> , Oxford.	<i>A. rogersi</i> , Hew. . London.
Eltr.	<i>f. salambo</i> , Gr.-Sm. Coll. Joicey.
<i>A. pentapolis</i> , Ward. Coll. Oberthür.	subsp. <i>lamborni</i> , Oxford.
subsp. <i>epidica</i> , Coll. Oberthür.	Eltr.
Oberth.	<i>A. rohlfsi</i> , Suff. . Coll. Ertl.
<i>A. perenna</i> , Doubl. . London.	<i>A. safie</i> , Feld. . Frankfurt.
subsp. <i>thesprio</i> , Coll. Oberthür.	<i>f. antinorii</i> , Auriv. Genoa.
Oberth.	<i>A. sambavae</i> , Ward . Coll. Oberthür.
subsp. <i>kaffana</i> , Tring.	<i>A. satis</i> , Ward . Coll. Oberthür.
Roth.	
<i>A. periphanes</i> , Coll. Oberthür.	<i>A. semivitrea</i> , Auriv. Brussels.
<i>f. beni</i> , B.-Bak. Coll. Bethune-Baker.	<i>A. servona</i> , Godt. . Edinburgh.
<i>f. melaina</i> , Eltr. . Oxford.	<i>f. reversa</i> , Eltr. . Tring.
<i>f. umida</i> , Wichgr. Coll. Wichgraf.	♀ <i>f. rubra</i> , Eltr. . Tring.
<i>f. acritoides</i> , Eltr. Oxford.	subsp. <i>orientis</i> , Stockholm.
<i>A. petraea</i> , Boisd. . Coll. Oberthür.	Auriv.
<i>f. taborana</i> , Suff. Coll. Suffert.	<i>f. depunctella</i> , Berlin.
<i>A. pharsalus</i> , Ward. Coll. Oberthür.	Strand
<i>f. pharsaloides</i> , Holl. Washington.	<i>f. unipunctella</i> , Berlin.
<i>f. pallidepicta</i> , Berlin.	Strand
Strand	<i>f. semipunctella</i> , Berlin.
	Strand
	<i>f. transienda</i> , Berlin.
	Strand

subsp. <i>rhodina</i> , R. and J.	Tring.	<i>A. uvui</i> , Gr.-Smith .	Coll. Joicey.
subsp. <i>limonata</i> , Eltr.	London.	subsp. <i>balina</i> , Karsch	Berlin.
subsp. <i>tenebrosa</i> , Eltr.	Tring.	<i>A. unimaculata</i> , Gr.- Smith	Coll. Joicey.
<i>A. sotikensis</i> , Sharpe	Coll. Jackson.	<i>A. vesperalis</i> , Gr.-Sm.	Coll. Joicey.
subsp. <i>katana</i> , Eltr.	Oxford.	subsp. <i>catori</i> , B.- Bak.	Coll. Cator.
f. <i>supponina</i> , Staud.	Berlin.	<i>A. violarum</i> , Boisd. .	Coll. Ober- thür.
subsp. <i>rowena</i> , Eltr.	Tring.	<i>A. viviana</i> , Staud. .	Berlin.
<i>A. stenobea</i> , Wal- lengr.	Stockholm.	<i>A. welwitschii</i> , Rogenh.	Vienna.
<i>A. strattipocles</i> , Oberth.	Coll. Ober- thür.	subsp. <i>alboradiata</i> , Auriv.	
<i>A. terpsichore</i> , Linn.		subsp. <i>lobemba</i> , Eltr.	Oxford.
♀ f. <i>janisca</i> , Godt.	Edinburgh.	<i>A. wigginsii</i> , Neave .	Oxford.
f. <i>rougeti</i> , Guérin.		<i>A. zambesina</i> , Auriv.	S. Fiel.
f. <i>melas</i> , Oberth. .	Coll. Ober- thür.	<i>A. zetes</i> , Linn.	
f. <i>subserena</i> , Gr.- Sm.	Tring.	f. <i>menippe</i> , Drur.	
f. <i>venturina</i> , Thur.	Berlin.	f. <i>jalema</i> , Godt. .	Edinburgh.
f. <i>connexa</i> , Thur.	Berlin.	subsp. <i>acara</i> , Hew.	London.
f. <i>intermediana</i> , Strand	Berlin.	f. <i>caffra</i> , Feld. .	Tring.
f. <i>ventura</i> , Hew. .	London.	f. <i>mhondana</i> , Suff.	Coll. Suffert.
f. <i>rangatana</i> , Eltr.	London.	f. <i>tescea</i> , Suff. .	Coll. Suffert.
subsp. <i>ochrascens</i> , Sharpe.	Coll. Jackson.	<i>A. zitja</i> , Boisd. .	Coll. Ober- thür.
<i>A. turna</i> , Mab.		f. <i>radiata</i> , Guénee	
f. <i>marmorata</i> , Gr.- Smith.	Coll. Joicey.	f. <i>calida</i> , Butl. .	London.
		f. <i>rakeli</i> , Boisd. .	Coll. Ober- thür.
		f. <i>fumida</i> , Mab. .	Coll. Mabilie.
			(?)
		<i>A. zonata</i> , Hew. .	London.

BIBLIOGRAPHY.

ANGAS, G. F. Kaffirs Illustrated London, 1849.

AURIVILLIUS, C. Verzeichniss einer vom Herrn Fritz Theorin aus Gabun und dem Gebiete des Camerunflusses heimgebrachten Schmetterlingssammlung. Ent. Tidskr. 12, p. 193-228, pl. 1-3, 1891.

—— Beiträge zur Kenntniss der Insektenfauna von Kamerun. Ent. Tidskr., p. 257, etc., 1893. (Four plates, and text figures.)

—— Beiträge zur Kenntniss der Insektenfauna von Kamerun. 2. Tagfalter. Ent. Tidskr. 14, p. 257-292, 1893; 15, p. 273-314, 1894; 16, p. 195-220, etc., 1895.

- AURIVILLIUS, C. Neue Acraeiden aus dem Congo-Gebiete. Ent. Tidskr., p. 111, etc., 1895.
- Rhopalocera Aethiopica, Stockholm, 1898.
- Lepidoptera, Rhopalocera und Heterocera (Pars I) von Madagaskar, den Comoren und den Inseln Ostafrikas. Sonderabdruck aus Voeltzkow, Reise in Ostafrika in den Jahren 1903–1905, Band II., Stuttgart, 1909.
- Verzeichniss von Lepidopteren gessammelt bei Mukimbungu am unteren Kongo von Herrn E. Laman. Arkiv för Zoologi, Band 3, No. 1, 1905.
- Diagnosen Neuer Lepidopteren aus Africa (9). Arkiv för Zoologi, Stockholm, 1909.
- Wissenschaftliche Ergebnisse der schwedischen zoologischen Expedition nach dem Kilimandjaro, dem Meru, und den umgebenden Massaistuppen Deutsch-Ostafrikas 1905–1906 unter Leitung von Prof. Dr. Yngve Sjöstedt. Lepidoptera, Stockholm, 1910.
- Tres Lepidopteros novos da Africa Portugesa. Brotéria. Serie Zoologica, Vol. IX, Fasc. III., St. Fiel, 1910.
- Schmetterlinge gesammelt in Westafrika von Leonardo Fea in den Jahren 1897–1902. Annali del Museo Civico di Storia Naturale di Genova, April, 1910.
- BETHUNE-BAKER, G. T. On new species of Lycaenidae from W. Africa. Ann. Nat. Hist., 7, xii, p. 324, etc., 1903.
- Descriptions of new Rhopalocera from the Upper Congo. Ann. Nat. Hist., 8, ii, p. 467, etc., 1908.
- Descriptions of new species of Butterflies of the Division Rhopalocera from Africa and from New Guinea. Proc. Zool. Soc., London, p. 110, etc., 2 pl. 1908.
- BLANCHARD, E. Histoire Naturelle des Insectes, Paris, 1840.
- BOISDUVAL, J. A. Faune Entomologique de Madagascar, Bourbon, et Maurice. Lépidoptères, Paris, 1883.
- Spécies général des Lépidoptères, Paris, 1836.
- Catalogue des Lépidoptères recueillis par M. Delegorgue 1838–1844, in Delegorgue, A. Voyage dans l'Afrique Australe, Vol. 2, p. 585–602, 1847.
- Faune Entomologique de Madagascar, etc. Lépidoptères, Paris, 1883.

- BUTLER, A. G. Catalogue of the Diurnal Lepidoptera in the B.M. described by Fabricius, London, 1869.
- Descriptions of some new species and a new genus of Diurnal Lepidoptera, etc. Trans. Ent. Soc., p. 423, etc., 1874.
- Cistula Entomologica, London (?), 1874.
- On a collection of Lepidoptera from Southern Africa. Ann. Nat. Hist. (4), 16, p. 394–420, 1875.
- On a collection of Lepidoptera recently received from Abyssinia. Ann. Nat. Hist., p. 480–490, 1876.
- On a collection of Lepidoptera recently received from Madagascar. Ann. Nat. Hist. (5), 2, p. 283–297, 1878.
- Descriptions of new species of Lepidoptera from Madagascar, with notes on some of the forms already described. Ann. and Mag. Nat. Hist., Vol. IV, p. 227, etc., 1879.
- On a collection of Lepidoptera from the Island of Johanna. Ann. Nat. Hist. (5), 3, p. 186–192, 1879.
- On the Lepidoptera collected in Socotra by J. B. Balfour. Proc. Zool. Soc., p. 175–180, 1881.
- On some Lepidoptera from the Victoria Nyanza. Ann. and Mag. Nat. Hist., Vol. 12, p. 101, etc., 1883.
- An account of two collections of Lepidoptera recently received from Somaliland. Proc. Zool. Soc., p. 756–776, 1886.
- On the Lepidoptera received from Dr. Emin Pascha. Proc. Zool. Soc., p. 55–85, 1888.
- On two collections of Lepidoptera from British Central Africa. Proc. Zool. Soc., 1893, p. 643–684, pl. 60, 1894.
- On a collection of Lepidoptera from British E. Africa. Proc. Zool. Soc., 557–593, 1894.
- On a small collection of Butterflies made by Consul Alfred Sharpe at Zomba, British Central Africa. Proc. Zool. Soc., p. 720–721, 1895.
- On Lepidoptera recently collected in British E. Africa by Mr. G. F. Scott Elliot. Proc. Zool. Soc., p. 722–742, 1895.
- Notes on Seasonal Dimorphism in certain African Butterflies. Trans. Ent. Soc., p. 519, etc., 1895.
- On the *Acraea cynthia* of Drury. Ann. and Mag. Nat. Hist., Vol. 16, p. 271, 1895.

- BUTLER, A. G. On a small collection of Lepidoptera sent from Nyasa in 1895 by Mr. R. Crawshay. *Ann. Nat. Hist.* (6), 18, p. 67-75, 1896.
- On a collection of Butterflies obtained by Mr. Richard Crawshay in Nyasaland. *Proc. Zool. Soc.*, p. 108-136, 1896.
- On the Butterflies obtained in Arabia and Somaliland by Capt. Chas. G. Nurse and Col. J. W. Yerbury in 1894 and 1895. *Proc. Zool. Soc.*, p. 242-257, 1896.
- On two collections of Lepidoptera made by Mr. R. Crawshay in Nyasaland. *Proc. Zool. Soc.*, p. 817-850, pl. 41, 42, 1896.
- A new Butterfly of the genus *Acraea* from Tugela, S. Africa. *Ann. and Mag. Nat. Hist.*, Vol. 18, p. 467, 1896.
- Seasonal Dimorphism in African Butterflies. *Trans. Ent. Soc.*, p. 105, etc., 1897.
- On a small collection of Lepidoptera made by Mr. F. Gillett in Somaliland. *Proc. Zool. Soc.*, p. 923-925, 1897.
- On a collection of Lepidoptera made by Mr. F. V. Kirby chiefly in Portuguese E. Africa. *Proc. Zool. Soc.*, p. 49 *et seq.*, 1898.
- On the Lepidopterous insects collected by Mr. G. A. K. Marshall in Natal and Mashonaland in 1895 and 1897. *Proc. Zool. Soc.*, p. 186-201, 1898.
- On a collection of Lepidoptera made in British E. Africa by Mr. C. S. Betton. 2 pl. *Proc. Zool. Soc.*, p. 395 *et seq.*, 1898.
- A list of Butterflies obtained in the Harar Highlands by Capt. H. G. C. Swayne, R.E. *Proc. Zool. Soc.*, p. 821 *et seq.*, 1898.
- On a small collection of Butterflies from British E. Africa, obtained at the end of 1897 and beginning of 1898 by Mr. R. Crawshay. *Proc. Zool. Soc.*, p. 825 *et seq.*, 1898.
- On a collection of Butterflies almost entirely made at Salisbury, Mashonaland, by Mr. Guy A. K. Marshall, in 1898. *Proc. Zool. Soc.*, p. 902 *et seq.*, 1898.
- On two small collections of Butterflies made by Mr. Richard Crawshay during 1898 in British E. Africa. 1 pl. *Proc. Zool. Soc.*, p. 417 *et seq.*, 1899.

- BUTLER, A. G. On a collection of Butterflies made by Mr. Richard Crawshay in British E. Africa. 1 pl. Proc. Zool. Soc., p. 962 *et seq.*, 1899.
- On a small collection of Butterflies from the Nandi Dist., Uganda Prot. E. side of L. Victoria, by Capt. Hobart of the Grenadier Guards. Proc. Zool. Soc., p. 976 *et seq.*, 1899.
- On two consignments of Butterflies collected by Mr. Richard Crawshay in the Kikuyu Country of British, E. Africa in 1899 and 1900. 1 pl. Proc. Zool. Soc., p. 911 *et seq.*, 1900.
- On some Butterflies from the White Nile collected by Capt. H. N. Dunn of the Egyptian Army. Proc. Zool. Soc., I., p. 25 and 26, 1901.
- On two Collections of Lepidoptera made by Sir Harry Johnston, K.C.B., in the Uganda Protectorate during the year 1900. Proc. Zool. Soc. (I.), p. 44 *et seq.*, 1 pl., 1902.
- CARPENTER, G. H. A collection of Lepidoptera from Lokoja, W. Africa. Proc. R. Dubl. Soc., Vol. 8, p. 304, etc., 1895.
- CLERCK, C. Icones Insectorum variorum, etc. Stockholm, 1759–1764.
- CRAMER, P. Papillons Exotiques, 1779–1791.
- CUVIER, G. L. C. D. Règne Animal, ed. 3. Ins. (1836).
- DEWITZ, H. Afrikanische Tagschmetterlinge, Nova. Acta. Acad. Cur., 41, 2, No. 2, p. 173–210, pl. 25, 26, 1879.
- Westafrikanische Tagschmetterlinge, Nova. Acta. Acad. Nat. Cur., 50 (4), 1 pl., 1887.
- West- und Centralafrikanische Tagschmetterlinge, Entom. Nachr., 15, p. 101–110, pl. 1–2, 1889.
- DIXEY, F. A., and others. On a collection of Insects and Arachnids made by Mr. E. N. Bennet in Socotra, with descriptions of new species. Proc. Zool. Soc., p. 372 *et seq.* Pl. XXX and XXXI, 1898.
- On a collection of Insects and Arachnids made in 1895 and 1897 by Mr. C. V. A. Peel, F.Z.S., in Somaliland, with descriptions of new species. 4 pl. Proc. Zool. Soc., p. 4 *et seq.*, 1900.
- DIXEY, F. A. On Lepidoptera from the White Nile, collected by Mr. W. L. T. Loat, F.Z.S. Trans. Ent. Soc., p. 141 *et seq.*, Pl. VII, 1903.
- DIXEY, F. A., and LONGSTAFF, G. B. Entomological ob-

- servations and captures during the visit of the British Association to S. Africa in 1905. Trans. Ent. Soc., p. 309 *et seq.*, 1907.
- DOUBLEDAY, HEWITSON, and WESTWOOD. Genera of Diurnal Lepidoptera, 1848.
- DUDGEON, G. C. Notes on W. African Butterflies. Proc. Ent. Soc., p. 1, etc., 1909.
- DUNCAN, J. Foreign Butterflies (Naturalists' Library, Vol. 5), Edinburgh, 1837.
- DRUCE, H. A list of the collection of Diurnal Lepidoptera made by Mr. J. J. Monteiro in Angola, with descriptions of some new species. Proc. Zool. Soc., p. 406-417, 1875.
- DRURY, D. Illustrations of Exotic Insects. London, 1770-1782.
- ELTRINGHAM, H. Mimetic Relations of East and West African Butterflies. Proc. Ent. Soc., p. lxvii, etc., 1909.
- African Mimetic Butterflies, Oxford, 1910.
- On the Forms and Geographical Distribution of *Acraea lycoa*, Godt., and *Acraea johnstoni*, Godm., Trans. Ent. Soc., p. 1, etc., 1911.
- Preliminary descriptions of some new or little-known forms of the genus *Acraea*. Novitates Zoologicae, Vol. 18, p. 149, etc., 1911.
- FABRICIUS, J. C. Species Insectorum. Hamburg, 1781.
- FAWCETT, J. M. Notes on the transformations of some South African Lepidoptera. Trans. Zool. Soc., p. 291-322, 1901.
- FEISTHAMEL, Baron. Description de quelques Lépidoptères Rhopalocères nouveaux ou peu connus. Ann. de la Soc. Entomol. de France, p. 247, etc., 1850.
- FELDER, C. and R. Reise de Österreichischen Fregatte Novara, Wien., 1864-1867.
- GEYER, C. M., in Hübner, Zuträge zur Sammlung exotischer Schmett, Augsburg, 1837.
- GODART and LATRIELLE. Encyclopédie Méthodique. Paris, Liège, 1782-1832, vol. 9.
- GODMAN, F. D., and DISTANT, W. L. Descriptions of five new species of Rhopalocera from E. Africa. Proc. Zool. Soc., p. 182, etc., 1880.
- GODMAN, F. D., SALVIN, O., and DRUCE, H. On the Lepidoptera collected by the late W. A. Forbes on the banks of the Lower Niger. Proc. Zool. Soc., p. 219-229, 1884.

- GODMAN, F. D. List of the Lepidoptera collected by Mr. H. H. Johnston during his recent expedition to Kilima-njaro. *Proc. Zool. Soc.*, 1885, p. 536-541, 1885.
- GODMAN, F. D., and SALVIN, O. Lepidoptera Rhopalocera in Jameson, J. T., *The story of the rear column of the Emin Pascha Relief Expedition*, London, 1890.
- GOOCH, W. D. Notes on the Lepidoptera of Natal. *Entomologist*, 14, p. 1-7, 1881.
- GRIMSHAW, P. H. On some type specimens of Lepidoptera and Coleoptera in the Edinburgh Museum of Science and Art. *Trans. Roy. Soc., Edinburgh*, Vol. 39, p. 4, etc., 1898.
- GROSE-SMITH, H. Descriptions of new species of African Butterflies in the Tring Museum. *Novit. Zool.*, p. 350, etc., 1898.
- A list of the Butterflies collected by Mr. William Bonny on the Aruwimi. *Proc. Zool. Soc.*, p. 463-473, 1890.
- Descriptions of two new species of *Acraea* from Mombasa. *Ann. and Mag. Nat. Hist.*, Vol. 5, p. 167, 1890.
- GROSE-SMITH, H., and KIRBY, W. F. *Rhopalocera Exotica*, 1887-1902.
- GRÜNBERG, K. Zur Kenntniss der Lepidopteren-Fauna der Sesse-Inseln im Victoria-Nyanza. *Sitzungsbericht der Gesellschaft naturforschender Freunde zu Berlin*, No. 3, p. 146, etc., 1910.
- GUENÉE, A. In A. Vinson, *Voyage à Madagascar*, Paris, 1865.
- GUÉRIN-MÉNEVILLE, F. E. Insectes dans "Voyage en Abyssinie exécuté pendant les années 1839-1843, par Lefebvre," Paris, 1849.
- HAASE, E. Untersuchungen über die Mimicry. *Bibliotheca Zoologica III*, Stuttgart, 1892-1893.
- HAMPSON, G. F. Lepidoptera from the Sabaki River, British E. Africa, with descriptions of new species. *Ann. Nat. Hist.*, 6, VII, p. 179, etc., 1891.
- HERBST, J. F. W. *Natursystem aller bekannten Insecten. Schmetterlinge*, Berlin, 1788-1804.
- HERON, F. A. Zoological results of the Ruwenzori Expedition, Rhopalocera. *Trans. Zool. Soc.*, London, 1909.
- HERRICH-SCHÄFFER, G. A. W. *Prodromus Systematis Lepidopterorum*, Regensburg, 1864-1867.

- HEWITSON, W. C. A list of diurnal Lepidoptera taken in Madagascar by Caldwell. Proc. Zool. Soc., p. 64–65, 1863.
- A list of Butterflies taken on the march to Coomassie by Lieut. Alwin S. Bell. Ann. Nat. Hist. (4), 13, p. 380–383, 1874.
- Descriptions of four new species of *Acraea* from Lake Nyassa. Ent. Mo. Mag., p. 51, 1877.
- Notes on a collection of Butterflies from Zanzibar, with descriptions of two new species of *Acraea*. Ent. Mo. Mag., p. 153, 1877.
- Exotic Butterflies, 1855–1874.
- HOLLAND, W. J. Descriptions of some new species of African Lepidoptera. Entomologist, Supplement, p. 89, 1892.
- A few Synonymical Notes upon African Lepidoptera. Ann. and Mag. Nat. Hist., Vol. 12, p. 246, etc., 1893.
- List of the Lepidoptera collected in Somaliland, East Africa, by Mr. William Astor Chamber and Lieut. von Hoehnel. Proc. U. S. Nat. Mus., 18, p. 259–264, 1895.
- List of the Lepidoptera collected in Eastern Africa, by D. W. L. Abbott. Proc. U. S. Nat. Museum, 18, p. 229–258, 1895.
- HOPFFER, C. Die Schmetterlinge in W. C. H. Peters, Reise nach Mossambique. Zoologie 5, p. 349–438, 1862.
- HÜBNER, J. Verzeichniss bekannten Schmetterlinge, Augsburg, 1816–1827.
- ILLIGER, K. Magazin für Insektenkunde, Brunswick, 1801–1807.
- KARSCH, F. Insecten von Baliburg (Deutsch Westafrika) gesammelt von Herrn Dr. Eugen Zintgraff. Ent. Nachr., 18, p. 161–183, 1892.
- Die Insekten der Berglandschaft Adeli im Hinterlande von Togo, etc. Berlin, Ent. Zeitschr. (38), p. 167–266, 1893.
- Neue Eingänge deutsch-ostafrikanischer Insecten in Museum für Naturkunde zu Berlin. Ent. Nachr., 23, p. 366–372, 1897.
- KEFERSTEIN, A. Entomologische Notizen aus dem Tagebuche des zu Madagascar verstorbenen Herrn. Tollin. Jahrbuch Akad. Erfurt. (2), 6, p. 1–17, 1870.
- KIRBY, W. F. A Handbook to the Order Lepidoptera, London, 1896.

- LANZ, H. Besprechung der von Dr. Bumiller 1893 aus Ostafrika mitgebrachten Schmetterlinge. *Iris* 9, p. 113-147, Dresden, 1896.
- LATHY, P. I. An account of a collection of Rhopalocera made on the Anambara Creek in Nigeria, West Africa. *Trans. Ent. Soc.*, p. 183, etc., Pl. VIII, 1903.
- On some Aberrations of Lepidoptera. *Trans. Ent. Soc.*, p. 65, etc., Pl. X, 1904.
- A contribution towards the knowledge of African Rhopalocera. *Trans. Ent. Soc.*, pp. 1-10, Pl. I, II, 1906.
- VON LINNÉ, C. *Museum S. R. M. Ludovicae Ulricaë Reginae*, etc., 1764.
- *Systema Naturae*, Ed. 12, Wien, 1767-1870.
- LONGSTAFF, G. B. Bionomic Notes on Butterflies. *Trans. Ent. Soc.*, p. 607, 1908. (See also Dixey, F. A.)
- LUCAS, H. *Histoire naturelle des Lépidoptères étrangers*, Paris, 1835.
- Chenu, *Encyclopédie d'histoire naturelle*. Paris, 1853-1880.
- MABILLE, P. Lépidoptères hétérocères observés à Madagascar (Suppl.). *Ann. Ent. Soc. de France*, p. 341, 1879.
- Note sur une collection de Lépidoptères recueillis à Madagascar. *Ann. Ent. Belg.*, 23 Bull., p. 104-109, 1880.
- *Histoire naturelle des Lépidoptères*, in A. Grandidier, *Histoire physique, etc., de Madagascar. Rhopalocères*. Paris, 1885.
- Description de deux Lépidoptères nouveaux de l'Afrique orientale. *Ann. de la Soc. Ent. de France*, Bulletin, p. clxix, 1888.
- Voyage du M. Ch. Alluaud, Lépidoptères. *An. E. Fr.* (6), 10, p. 17-51, 1890.
- MABILLE P., and VUILLOT, P. *Novitates Lepidopterologicae*, Paris, 1890-1893.
- MARSHALL, G. A. K. Notes on Seasonal Dimorphism in S. African Rhopalocera. *Trans. Ent. Soc.*, p. 551, etc., 1896.
- MARSHALL, G. A. K., with POULTON and others. Five Years' Observations and Experiments on the Bionomics of South African Insects. *Trans. Ent. Soc.*, p. 287-584, 1902.
- MONTEIRO, MRS. Delagoa Bay. London, 1891.

- MÖSCHLER, H. B. Beiträge zur Schmetterlingsfauna, des Kaffernlandes. Verh. z. b. Ges. Wien., 33, p. 267–310, pl. 16, 1884.
- Beiträge zur Schmetterlingsfauna der Goldküste. Abhandl. Senckenb. Ges. 15, 1, p. 49–100, pl. 1, 1887.
- NEAVE, S. A. Some bionomic notes on Butterflies from the Victoria Nyanza. Trans. Ent. Soc., 1906, p. 207 *et seq.*, Pl. IX to XII.
- On a large collection of Rhopalocera from the shores of the Victoria Nyanza. Novit. Zool. xi, p. 323–363, 1904.
- Zoological collections from Northern Rhodesia and adjacent territories. Lepidoptera Rhopalocera. Proc. Zool. Soc., p. 2–86, 1910.
- OBERTHÜR, CH. Etudes d'Entomologie. Rennes, 1876.
- Spedizione Italiana nell' Africa equatoriale. Risultati Zoologici Rhopalocera. Ann. del. Mus. Civ. di Genova, Vol. 15, p. 146, etc., 1879.
- Spedizione Italiana nell' Africa equatoriale. Risultati zoologici. I. Lepidotteri. Ann. Mus. Genova, 15, p. 129–186, 1880; 18, p. 709–740, 1883.
- PAGENSTECKER, A. Lepidopteren gesammelt in Ostafrika, 1888–1889 von Dr. Franz Stuhlmann. Jahrbuch Hamb. wissench. Anst., 10, p. 207–262, 1893.
- PALISOT DE BEAUVOIS, A. M. F. J. Insectes recueillis en Afrique et en Amerique, etc., Paris, 1805–1821.
- PLÖTZ, C. Verzeichniss der von Professor Dr. R. Buchholz in Westafrika gesammelten Schmetterlinge. Stettin Entom. Zeit., p. 76, etc., 1880.
- POULTON, E. B. Mimetic forms of *Papilio dardanus* (*merope*) and *Acraea johnstoni*. Trans. Ent. Soc., London, p. 281 *et seq.*, Pl. XVII to XXII, 1906.
- in Rogers' Bionomic notes on some British E. African Butterflies. Trans. Ent. Soc., p. 529–533, 1908.
- REICHE, L. Les Insectes dans le voyage en Abyssinie par Ferret et Galliner, Paris, 1847–1849.
- RIBBE, C. Zwei neue Tagschmetterlinge aus Afrika. Iris, p. 181, 1 plate, 1889.
- ROGENHOFER, A. F. Afrikanische Schmetterlinge des k. k. naturhist. Hofmuseums. Ann. Mus. Wien., Vol. iv, p. 547, etc., 1889.
- Diagnosen neuer Schmetterlinge des k. k. naturhist. Hofmuseums. Verhandl. der k. k. zool.-bot. Gesellschaft, Wien., Vol. xli, p. 563, etc., 1891.

- ROGENHOFER, A. F., Afrikanische Schmetterlinge des k. k. naturhist. Hofmuseums. Ann. Mus. Wien., Vol. 6, p. 455 etc., 1891.
- Schmetterlinge gesammelt von Dr. O. Baumann in, O. Baumann, Usambara und seine Nachbargebiete, Berlin, 1891.
- Neue Lepidopteren des k. k. naturhist. Hofmuseums. Verhandl. der k. k. zool.-bot. Gesellschaft, Wien., Vol. 42, p. 571, etc., 1892.
- ROGERS, Rev. K. St. A., with POULTON and TRIMEN. Some bionomic notes on British East African Butterflies. Trans. Ent. Soc., p. 489 *et seq.*, Pl. XXVI-XXIX, 1908.
- SAALMÜLLER, M. Mittheilungen über Madagascar, seine Lepidopterenfauna, etc. Bericht Senckenbergische naturforschende Gesellschaft, Frankfurt, p. 71-96, 1877-1878; p. 122-126, 1878-1879.
- Lepidopteren von Madagascar, 1, 2. Abhandl. Senck. nat. Ges. Frankfurt a. Main, 1884-1891.
- SCHATZ and RÖBER. Exotische Schmetterlinge.
- SCHAUS, W., and CLEMENTS, W. G. On a collection of S. Leone Lepidoptera, London, 1893.
- SEBA, A. Locupletissimi Rerum Naturalium III. Amsterdam, 1758.
- SHARPE, E. M. B. Descriptions of new species of East African Butterflies. Ann. and Mag. Nat. Hist., Vol. V, p. 335, 1890.
- Further descriptions of Butterflies and Moths collected by Mr. F. L. Jackson in E. Africa. Ann. and Mag. Nat. Hist., Vol. V, p. 440, etc., 1890.
- On a collection of Lepidoptera from Bangala. Iris, 4, p. 53-60, Dresden, 1891.
- Descriptions of new species of Butterflies from the Island of St. Thomas, West Africa. Proc. Zool. Soc., p. 553-558, 1893.
- List of Butterflies collected by Capt. J. W. Pringle, R.E., in British E. Africa. Proc. Zool. Soc., 1894, p. 334-353, pl. 19, 1894.
- Descriptions of some new species of Acraeidae collected by Mr. F. L. Jackson at Ntebi, Uganda. Ann. and Mag. Nat. Hist., Vol. XIX, p. 581, etc., 1897.
- A list of the Lepidopterous Insects collected by Mrs. Lort Phillips in Somaliland. Proc. Zool. Soc., 1898, p. 369 *et seq.*

- SHARPE, E. M. B. A list of the Lepidoptera collected by Mr. Arthur H. Neumann, in Neumann, A. H., *Elephant Hunting in East Equatorial Africa* (Appendix), London, 1898.
- SNELLEN VAN VOLLENHOVEN, S. C. *Recherches sur la faune de Madagascar, etc., d'après les découvertes de F. P. L. Pollen et D. C. van Dam*, 5. 1. Insectes. *Lépidoptères*, pp. 3–5, 1869.
- SNELLEN, P. C. T. *Bijdrage tot de Flinder-Fauna van Neder-Guinea*. *Tijdschr. v. Entom.*, 15, p. 1 *et seq.*, 1872.
- *Lepidoptera van het Prinsen-Eiland*. *Tijdschr. v. Ent.*, 16, p. 71–74, 1873.
- *Aanteekeningen over Afrikaansche Lepidoptera*. *Tijdschr. von. Ent.*, 25, p. 215–234, 1882.
- STAUDINGER, *Exotische Schmetterlinge*, 1885.
- STRAND, E. *Verzeichnis der von Herrn Oberleutnant F. Reuter an der Dume-Mündung in Kamerun gesammelten, etc., Lepidopteren*. *Wiener Entomologische Zeitung*, p. 29, etc., 1910.
- *Zoologische Ergebnisse der Expedition des Herrn Hauptmann a. D. Fromm, 1908–09, nach Deutsch-Ostafrika*. 1. *Lepidoptera*. *Mitteilungen aus dem Zoologischen Museum in Berlin*, V Band, 2 Heft, 1911.
- *Neue afrikanische Pierididen und Nymphalididen gesammelt von Herrn Prof. Dr. J. Vosseler*. *Internationale Entomologische Zeitschrift Guben*, p. 219, etc., 1911.
- SUFFERT, E. *Neue afrikanische Tagfalter aus dem kön. zool. Museum, Berlin, und meiner Sammlung*. *Deutsche Entomologische Zeitschrift*, “*Iris*,” p. 12, etc., 1904.
- *Neue Tagfalter aus Deutsch. Ost-Africa*. *Deutsche Entomologische Zeitschrift*, “*Iris*,” p. 124, etc., 1904.
- SULZER, J. H. *Geschichte der Insecten nach dem Linneischen System* (Winterthur), 1776.
- THURAU, F. *Neue Rhopaloceren aus Ost. Africa*. *Berl. Ent. Zeit.*, Bd. XLVIII, p. 117–144, pl. II, 1903.
- *Neue Lepidopteren aus Ost. und Central-Afrika*. *Berlin Entomol. Zeitschrift*, Bd. XLVIII, p. 301–314, 1903.
- TRIMEN, R. *Rhopalocera Africae Australis*, 1866.

- TRIMEN, R. On some undescribed Species of South African Butterflies, including a new genus of Lycaenidae. Trans. Ent. Soc., p. 69, etc., 1868.
- On some remarkable Mimetic Analogies among African Butterflies. Trans. Linn. Soc., Vol. XXVI, p. 497–522, 1868.
- Notes on Butterflies collected by J. H. Bowker, Esq., in Basuto Land. Trans. Ent. Soc., London, p. 341–390, 1 pl., 1870.
- On some new species of Rhopalocera from Southern Africa. Trans. Ent. Soc., p. 433, etc., 1881.
- and J. H. BOWKER. South African Butterflies, London, 1887–89.
- On Butterflies collected in tropical South-Western Africa, by Mr. A. W. Eriksson. Proc. Zool. Soc., p. 59–107, pl. 8, 9, 1891.
- On some recent additions to the list of South African Butterflies. Trans. Ent. Soc., London, p. 169–178, 1891.
- On a collection of Butterflies made in Manica, Tropical S.E. Africa, by Mr. F. C. Selous, in the year 1892. Proc. Zool. Soc., p. 14, etc., 1894.
- On some new species of Butterflies from Tropical and Extra Tropical S. Africa. Trans. Ent. Soc., p. 181, etc., 1895.
- On some new or little-known Species of African Butterflies. Trans. Ent. Soc., p. 1, etc., 1898.
- On some new or imperfectly known forms of South African Butterflies. Pl. XIX and XX. Trans. Ent. Soc., p. 231 *et seq.*, 1904.
- On some new or hitherto unfigured forms of South African Butterflies. Trans. Ent. Soc., p. 59 *et seq.* Pl. IV, V, VI, 1906.
- Description of new forms of British E. African Butterflies in the Hope Department, Oxford Univ. Museum. Trans. Ent. Soc., 1908, p. 547 *et seq.*
- WALLENGREN, H. D. J. Lepidoptera Rhopalocera in terra Caffrorum collecta. Vet. Akad. Handl. (2), 2, 4, 1857.
- Bidrag till södra Afrikas Fjärilfauna. Öfvers. Vet. Akad. Förh., 29, 3, p. 41–61, 1872.
- WARD, C. African Lepidoptera, London, 1872.
- Description of New Species of Diurnal Lepidoptera from Madagascar. Ent. Mo. Mag., 1872, pp. 2–3.

- WARD, C. Description of New Species of African Diurnal Lepidoptera. Ent. Mo. Mag., 1873.
- WATERHOUSE, C. O. Aid to the Identification of Insects, London, 1880-90.
- WEALE, J. P. MANSEL-. On the variation of Rhopaloceros forms in South Africa. Trans. Ent. Soc., p. 265, etc., 1877.
- WESTWOOD, J. O. Lepidoptera, in Oates, F., Matabele Land and the Victoria Falls. London, 1881.
- WEYMER, G. Exotische Lepidopteren VI. Stettiner Entomol. Zeit., p. 79, etc., 1892.
- Einige afrikanische Lepidopteren. Deutsche Entomologische Zeitschrift, "Iris," p. 221, etc., 1903.
- Einige neue Lepidopteren des Deutschen Entom. Nat. Museum. Deutsche Ent. Zeit., p. 728, etc., 1908.
- WICHGRAFF, F. Beschreibung neuer Formen der Gattung *Acraea* aus Rhodesia, Mashunaland and Angola. Berlin, Ent. Zeitschrift, Band 53, p. 240, etc., 1908.
- WULFEN, X. Descriptiones quorundam capensium insectorum. Erlange, 1786.

INDEX TO SPECIFIC NAMES

- abadima*, 30, 192
abbotti, 235
abdera, 112
abrupta, 230
acara, 25, 84
acerata, 35, 235
acontias, 137
acrita, 29, 143
acritoides, 29, 140
acronycta, 190
actiaca, 128
acutipennis, 117
admatha, 23, 78
aequalis, 337
aethiops, 328
agema, 347
aglaonice, 20, 32, 186
alberta, 22, 307
albimaculata, 299
albomaculata, 190
alboradiata, 25, 97, 174
alciope, 37, 38, 322
alcippina, 38, 210
alicia, 33, 221, 323
althoffi, 33, 251
alticola, 350
ambigua, 29, 143
amicitiae, 20, 24, 40, 317
amphimalla, 161
amphiprotea, 331
anacreon, 21, 28, 198
anacreontica, 198
anaemia, 20, 30, 31, 177
andromache, 346
andromba, 68
anemosa, 25, 94
angolanus, 299
anomala, 350
ansorgei, 38, 318
antinorii, 40, 316
apecida, 35, 229
aquila, 144
aquilina, 143
arabica, 24, 31, 73, 172
arcticincta, 94
arctifasciata, 331
areca, 28, 107
argentea, 36, 281
artemisa, 182
asboloplintha, 20, 24, 196
asema, 26, 122
astrigera, 26, 101
atergatis, 24, 30, 188
atolmis, 24, 27, 137
aubyni, 36, 304
aureola, 32, 142
aurivillii, 38, 323
axina, 31, 180
balbina, 81
balina, 34, 217
banka, 33, 221
barberi, 25, 84
baumanni, 112
baxteri, 41, 42, 267
bella, 29, 144
bellona, 29, 144
bellua, 192
bendis, 182
beni, 29, 139
biraca, 230
bomba, 28, 198
bonasia, 33, 35, 220, 249
boseae, 312
braesia, 22, 24, 169
brahmsi, 35, 235
braunei, 210
brunnea, 26, 102
bukoba, 240, 336
burni, 24, 68
buruensis, 346, 348
buschbecki, 35, 291
butleri, 341
buttneri, 26, 118

- buxtoni*, 81, 239
byatti, 213

cabira, 35, 229
cabiroides, 35, 221
caecilia, 30, 182, 211
caffra, 26, 84
caldarena, 32, 161
calida, 204
calyce, 72
camaena, 20, 23, 82
candida, 171
caoncius, 174
cappadox, 221
carmentis, 327
castanea, 328
catori, 48
cephaea, 192, 349
cepheus, 26, 111, 239, 348
cerasa, 21, 54, 302
cerita, 23, 55
chaeribula, 29, 153
chaeribulula, 144
chambezi, 28, 132
chilo, 22, 23, 25, 89
cinerea, 20, 22, 23, 307
circeis, 41, 42, 292, 297
clarei, 193
confluens, 249
confusa, 340
conjuncta, 38, 319
connexa, 240
conradti, 36, 289
corona, 45
cretacea, 37, 323
crystallina, 89
cuva, 22, 50
cydonia, 322
cynthia, 221, 230
cynthus, 220, 249

daira, 38, 210
damii, 22, 50
decora, 138
defasciata, 174
dejana, 292
depunctella, 292
derubescens, 37, 281
detecta, 32, 164
dewitzi, 36, 286
diavina, 235
dice, 59
diogenes, 23, 156

dircea, 161
disjuncta, 38, 321
dissociata, 196
dohertyi, 346, 348
dorotheae, 327
doubledayi, 20, 31, 171, 174, 177, 180
drucei, 252
dubiosa, 94

egina, 24, 26, 27, 28, 106, 192
eginopsis, 112
ehmckeii, 61
ella, 31, 179
emini, 102
empusa, 122
encedon, 38, 209
encedonia, 210
entebbia, 336
entoria, 347
epidica, 40, 46
eponina, 220, 221, 239
equatorialis, 31, 177
erili, 332
esebria, 39, 331
eugenia, 22, 53
exalbescens, 36, 281
excelsior, 33, 215

fallax, 337
felina, 118
fenelos, 268
fenestrata, 186
flava, 327
flavescens, 340
flavomaculatus, 229
fornax, 33, 309
fulleborni, 267
fulva, 210
fulvescens, 340
fumida, 204, 323
fumigata, 347

gaekwari, 171
gea, 327
gelonica, 269
goetzi, 33, 213
gracilis, 122
grosvenori, 42, 276
guillemei, 27, 117

halali, 27, 128

- harrisoni*, 27, 107
helvimaculata, 41, 269
hoeneli, 89
horta, 23, 76
hova, 22, 60
humilis, 21, 305
hypatia, 182, 192
hypoleuca, 28, 92

igati, 22, 49
igola, 36, 42, 302
inaureata, 328
indica, 347
induna, 28, 198
infuscata, 210
insignis, 23, 81
insularis, 40, 345
interjecta, 327
intermedia, 27, 31, 159
intermediaria, 34, 240
interrupta, 94, 319
issorica, 350
iturina, 21, 57, 305

jacksoni, 332
jalema, 25, 84
janisca, 239
jodutta, 39, 327
johnstoni, 39, 339

kaffana, 262
kakana, 23, 57
karschi, 34, 230
katana, 35, 227
kenia, 337
khara, 107
kilimandjara, 337
kraka, 21, 52

lactea, 156
lactimaculata, 41, 269
lamborni, 37, 62
latifasciata, 323
leona, 41, 278
leonina, 278
leucographa, 23, 79
leucopyga, 27, 157
leucosoma, 169
lia, 23, 67
liacea, 174
liberia, 239
limonata, 41, 293
lindica, 144

liszti, 157
littoralis, 29, 144
lobemba, 25, 97
lofua, 26, 127
lualabae, 29, 155
lumiri, 33, 219
lutealba, 319
luxi, 137
lycia, 38, 210
lycoa, 39, 42, 336
lycoides, 292
lygus, 190

macarina, 38, 322
machequena, 22, 66
maculiventris, 302
madhela, 71
mahela, 22, 71
mairiessei, 36, 286
makupa, 42
manandaza, 64
manca, 29, 144
mandane, 298
manjaca, 239
mansya, 27, 134
maransetra, 64
marginata, 140
marmorata, 26, 105
marnois, 30, 184
masamba, 41, 42, 312
masaris, 332
masonala, 50
matuapa, 72
medea, 27, 107
media, 336
medoa, 107
melaina, 29, 139
melanosticta, 286
melanoxantha, 36, 288
melas, 239
menippe, 25, 83
metaprotea, 332
meyeri, 346, 348
mhondana, 72, 84
nima, 31, 32, 167
minima, 217
mirabilis, 20, 216
mirifica, 19, 208
modesta, 174
moluccana, 346, 347
mombasae, 21, 43
monteironis, 332
mosana, 94

msamwiae, 143
murcia, 82
mutata, 319
mycenaëa, 84
mystica, 171

nandensis, 321
natalensis, 230
natalica, 30, 190, 192
nataliensis, 120
nebulosa, 347
necoda, 210
neobule, 23, 72
neluska, 161
nero, 161
newtoni, 35, 285
nia, 257
nidama, 50
nigrescens, 112
nigroapicalis, 264
niobe, 20, 24, 344
nohara, 27, 128
ntebiae, 292
nubilata, 332
nyassicola, 143

obeira, 24, 68, 302
oberthuri, 34, 249
obscura, 174
ochrascens, 34, 240
ochreata, 252
octobalia, 340
oenone, 346, 347
ombria, 161
omrora, 26, 124
oncaea, 30, 174, 184
onerata, 27, 135
opis, 298
oppidia, 40, 278
oreas, 39, 298
orestia, 40, 305
orestina, 305
oreta, 263
orientis, 292
orina, 39, 40, 263
orinata, 264
orincta, 264
oscari, 25, 91

pallidepicta, 257
parce, 346, 348
parrhasia, 41, 42, 277
parrhoppidia, 278
pasiphaë, 107

pauperata, 144
pelasgius, 40, 269
pella, 347
pelopeia, 42, 274
penelopeos, 36, 41, 42, 268, 277, 286
penella, 36, 281
penelope, 36, 281
pentapolis, 40, 46
percussa, 50
perenna, 26, 37, 261
periphanes, 29, 139
perrupta, 239
persephone, 107
pervia, 301
petraea, 26, 114
petrina, 114
pharsaloides, 37, 256
pharsalus, 37, 256
pheusaca, 112
pica, 319
piva, 68
planesium, 221
pollonia, 347
polydectes, 261
pomponia, 281
praeponina, 221
protea, 331
proteina, 340
pudora, 30, 182
pudorella, 20, 32, 163
pudorina, 28, 144
punctellata, 27, 129
pseudatolmis, 27, 129
pseudegina, 30, 192
pseudepaea, 252
pseudolycia, 26, 101
pseudoprotea, 331

quirina, 22, 59
quirinalis, 40, 308

rabbaiæ, 21, 43
radiata, 38, 204, 211
rahira, 24, 202
rakeli, 204
ranavalona, 22, 64
rangatana, 34, 240
recaldana, 161
regalis, 31, 169
reversa, 293
rhodesiana, 31, 32, 166
rhodina, 257, 293
rogersi, 37, 61

- rohlfsi*, 24, 136
rosa, 59
rosina, 22, 89
rougeti, 34, 239
rowena, 35, 227
rubescens, 24, 196
rubra, 41, 293
rubrofasciata, 252
rudolphina, 107
ruppeli, 312

safie, 40, 315
salambo, 37, 61
saluspha, 257
sambavae, 41, 314
sanderi, 346, 347
saronis, 108
satis, 23, 44
schecana, 323
seis, 23, 72
semialbescens, 340
semifulvescens, 340
semipunctella, 293
semivitreata, 39, 300
sepia, 41, 269
serena, 220, 239
servona, 39, 41, 42, 286, 292
sganzini, 210
siabona, 221
sidamona, 84
siginna, 81
silacea, 319
silia, 312
smithii, 309
sokotrana, 72
sotikensis, 35, 227
speciosa, 28, 198
stenobea, 30, 32, 190
strattipocles, 41, 42, 311
subfulva, 327
subochreatea, 293
subserena, 34, 239
subsquamia, 267
sucepha, 112
suffusa, 319
supponina, 35, 227
sykesi, 31, 171

laborana, 114
telekiana, 340
tella, 38, 323
telloides, 252

tenebrosa, 293
tenella, 34, 235
tenelloides, 35, 221
terpsichore, 34, 239, 350
tescea, 84
thelestis, 46
thesprio, 262
tirika, 336
toruna, 341
transienda, 293
transita, 306
translucida, 36, 281
trimeni, 84
turna, 21, 26, 105

ufipana, 94
umbrata, 26, 30, 124, 192
umbrina, 182
umida, 29, 140
unimaculata, 21, 56
unipunctella, 293
urungensis, 94
usagarae, 211
usaramensis, 144
utengulensis, 144
uvui, 33, 217

ventura, 34, 240
venturina, 240
vesperalis, 40, 48
vesta, 346, 349
vestalina, 350
vestita, 350
vestoides, 350
vinidia, 35, 235
violae, 346, 348
violarum, 26, 120
vitrea, 37, 281
viviana, 34, 233
vuilloti, 37, 257

welwitschii, 25, 97
wigginsi, 28, 206
wissmanni, 89

zaire, 291
zambesina, 75
zetes, 24, 83
zethea, 84
zethes, 84
zidora, 107
zitja, 24, 33, 204
zonata, 21, 42

EXPLANATION OF PLATE I.

FIG.

1. *A. pseudolygia* f. *astrigera*, Butl. ♂, Machakos. (Oxford.)
2. *A. pseudolygia* f. *emini*, Weymer ♀, Kibaoni, Uhamba. (Tring.)
3. *A. pseudolygia* f. *brunnea*, Eltr. ♀ (Type), Masindi. (Tring.)
4. *A. pseudolygia* f. *brunnea*, Eltr. ♂ (Type), Guimbungo, Angola. (Tring.)
5. *A. pseudolygia pseudolygia*, Butl. ♂, Pungo Andongo, Angola (Tring.)
6. *A. nohara pseudatolmis*, Eltr. ♂ (Type), Mahakata R., Gazaland. (Oxford.)
7. *A. rohlfsi*, Suff. ♂ (Type), Ukerewe I. (Coll. Ertl.)
8. *A. lofua*, Eltr. ♂ (Type), Lofu R., N.E. Rhodesia. (Oxford.)
9. *A. lofua*, Eltr. ♀ (Type), Lofu R., N.E. Rhodesia. (Oxford.)
10. *A. pseudolygia astrigera*, Butl. ♀, Machakos. (Oxford.)
11. *A. pharsalus vuilloti*, Mab. ♂, German E. Africa. (Coll. Joicey.)
12. *A. mansya*, Eltr. ♀ (Type), Mansya R., N.E. Rhodesia. (Oxford.)
13. *A. mansya*, Eltr. ♂ (Type), Mansya R., N.E. Rhodesia. (Oxford.)



H. Eltringham del.

West, Newman chr.

NEW AND LITTLE KNOWN FORMS OF ACRAEA.

EXPLANATION OF PLATE II.

FIG.

1. *A. egina medea*, Cram. ♂, ? Senegal. (Berlin.)
2. *A. doubledayi arabica*, Eltr. ♂ (Type), Azvaki Ravine, Arabia. (Tring.)
3. *A. doubledayi doubledayi*, Guér. ♂, Abyssinia. (Tring.)
4. *A. welwitschii welwitschii*, Rogenh. ♂, Cerambé, Bihé, Angola. (Tring.)
5. *A. welwitschii welwitschii*, Rogenh. ♀, Bumba, Angola. (Tring.)
6. *A. rhodesiana*, Wichgr. ♂, Rhodesia. (London.)
7. *A. ella*, Eltr. ♂ (Type), Benguella. (Tring.)
8. *A. aureola*, Eltr. ♂ (Type), Bihé, Angola. (Tring.)
9. *A. grosvenori*, Eltr. ♂ (Type), Rutschuru R. (Tring.)
10. *A. equatorialis equatorialis*, Neave ♂, Kisumu. (Oxford.)
11. *A. equatorialis equatorialis*, Neave ♀, Kisumu. (Oxford.)



H. Eltringham del.

Nest, Newman chr

NEW AND LITTLE KNOWN FORMS OF *ACRAEA*.

EXPLANATION OF PLATE III.

FIG.

1. *A. parrhasia parrhasia*, Fabr. ♀, near Lagos. (Oxford.)
2. *A. parrhasia* f. *leona*, Staud. ♀, S. Leone. (Tring.)
3. *A. peneleos* f. *lactimaculata*, Eltr. ♀ (Type), Fishtown, Fernando Po. (Tring.)
4. *A. servona rhodina*, R. and J. ♂, Entebbe. (Oxford.)
5. *A. servona orientis*, Auriv. ♀, Amani, German E. Africa. (Oxford.)
6. *A. oscari*, Roth. ♂, Charada Forest, Kaffa. (London.)
7. *A. pudorella pudorella*, Auriv. ♂, Campi-ya-Simba. (Tring.)
8. *A. acrita manca*, Thur, ♂, Itumba, German E. Africa. (Tring.)
9. *A. servona* f. *rubra*, Eltr. ♀ (Type), L. Assebe, Fernan Vaz. (Tring.)
10. *A. periphanes* f. *melaina*, Eltr. ♀, Chambezi Valley. (Oxford.)
11. *A. periphanes* f. *acritoides*, Eltr. ♂ (Type), Luwingu, L. Bangweolo. (Oxford.)



H. Eltringham del.

West, Newman chr.

NEW AND LITTLE KNOWN FORMS OF ACRAEA.

EXPLANATION OF PLATE IV.

FIG.

1. *A. cinerea alberta*, Eltr. ♂ (Type), 90 km. W. of L. Albert Edward. (Tring.)
2. *A. peneleos pelasgius*, Gr.-Sm. ♂, Toro. (Oxford.)
3. *A. parrhasia parrhasia*, Fabr. ♂, near Lagos. (Oxford.)
4. *A. penelope translucida*, Eltr. ♂ (Type), near Lagos. (Oxford.)
5. *A. penelope derubescens*, Eltr. ♂ (Type), Misahöhe Station, Togo. (Berlin.)
6. *A. penelope translucida*, Eltr. ♀ (Type), near Lagos. (Oxford.)
7. *A. penelope vitrea*, Eltr. ♂ (Type), Tiriki Hills. (Oxford.)
8. *A. penelope* ♀ f. *argentea*, Eltr. (Type), Entebbe. (Oxford.)
9. *A. cerita*, Sharpe ♂ (Type), Toro. (Coll. Joicey.)
10. *A. peneleos peneleos*, Ward ♂, near Lagos. (Oxford.)
11. *A. peneleos* f. *helvimaculata*, Eltr. ♀ (Type), near Lagos. (Oxford.)
12. *A. peneleos peneleos*, Ward ♀, near Lagos. (Oxford.)
13. *A. eugenia*, Karsch. ♀, Canhoca, Angola. (Tring.)
14. *A. iturina kakana*, Eltr. ♂ (Type), Adie Kaka, Kaffa. (London.)
15. *A. sotikensis supponina*, Staud. ♂ (Type), "Congo Region." (Berlin.)
16. *A. lumiri*, B. Baker ♂ (Type), Kissegneis. (Coll. Powell-Cotton.)



H. Eltringham del.

West, Newman chr.

NEW AND LITTLE KNOWN FORMS OF ACRAEA.

EXPLANATION OF PLATE V.

FIG.

1. *A. jodutta* f. *castanea*, Eltr. ♀ (Type), bred near Lagos by Lamborn. (Oxford.)
2. *A. terpsichore rangatana*, Eltr. ♂ (Type), Rangatan. (London.)
3. *A. penelope* ♀ f. *penella*, Eltr. (Type), Kitanwa, Unyoro. (Tring.)
4. *A. acrita bellona*, Weym. ♂, Bailundo, Angola. (Coll. Ertl.)
5. *A. equatorialis anaemia*, Eltr. ♂ (Type), Rabai. (Oxford.)
6. *A. aubyni*, Eltr. ♂ (Type), Mwaeba Hill, Mombasa. (Oxford.)
7. *A. periphanes* f. *umida*, Wichgr. ♂, L. Bangweolo. (Oxford.)
8. *A. jodutta* f. *inaureata*, Eltr. ♀ (Type), Rukuru Val., Nyassaland. (London.)
9. *A. nohara* f. *punctellata*, Eltr. ♂ (Type), Dedza Mt., Central Angoniland. (Oxford.)
10. *A. baxteri*, Sharpe ♂ (Type), Mpwapwa. (Coll. Joicey.)



Ulrichham de

West. Newman chr.

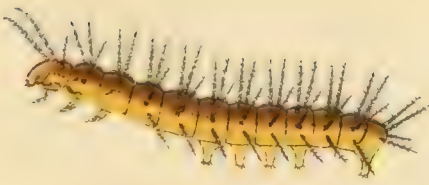
NEW AND LITTLE KNOWN FORMS OF ACRAEA.

EXPLANATION OF PLATE VI.

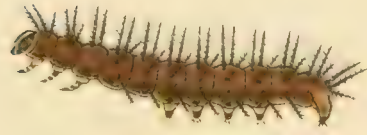
FIG.

1. Larva of *A. pentapolis pentapolis*.
2. „ „ *A. rogersi lamborni*.
3. „ „ *A. parrhasia parrhasia*.
4. „ „ *A. peneleos peneleos*.
5. „ „ *A. zetes zetes*.
6. „ „ *A. perenna perenna*.
7. „ „ *A. pharsalus pharsalus*.
8. „ „ *A. lycoa lycoa*.
9. „ „ *A. natalica pseudagina*.
10. „ „ *A. alciope alciope*.
11. „ „ *A. bonasia bonasia* (pale form).
12. „ „ „ „ „ (dark form).
13. „ „ *A. acerata vinidia*.
14. „ „ *A. oberthüri oberthüri*.
15. „ „ *A. egina egina*.
16. Pupa „ *A. rogersi lamborni*.

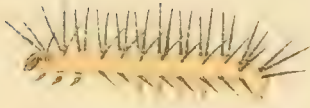
All the above are drawn from specimens taken and preserved by Mr. W. A. Lamborn at Oni near Lagos, and are now in the Hope Department at Oxford. Some of the larvae are probably not quite fully grown.



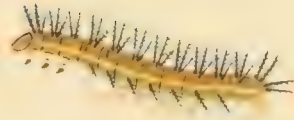
1



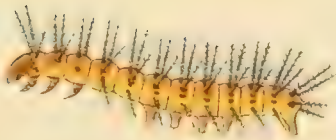
2



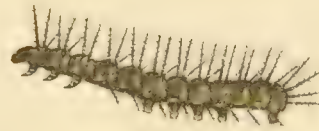
3



4



5



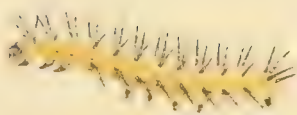
6



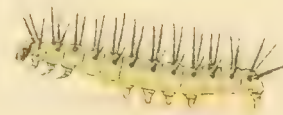
7



8



9



10



12



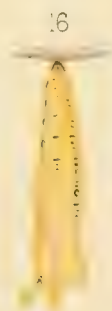
11



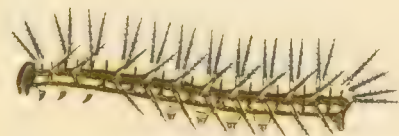
14



13



16



15

EXPLANATION OF PLATES VII-XVI.

The accompanying figures of genitalia are for the most part drawn as viewed from the side. In cases where they appear symmetrical about a central line they are viewed either from above or below. In many cases, as on Plates XI and XII, the view is from above, with the uncus cut away in order to give an uninterrupted view of the structure of the claspers. In almost every case the penis has been removed and drawn separately.

The following explanations may be noted:—

Pl. VII. 11c the ventral abdominal plate or velum. Figs. 5, 7, 8, 11b, 17, are viewed from below.

Pl. VIII. Figs. 1, 12, 13 viewed from above, Figs. 10 and 11 from below. Figs. 2, 3, 4, 5 appear to show considerable differences, but examination of a series of preparations shows such differences to be inconstant. The same applies to Figs. 6 and 7.

Pl. IX. Figs. 1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 16 viewed from above (uncus removed in *f.* 9). Fig. 6 is the dorsal abdominal plate spread out and viewed from beneath. Figs. 7 and 13 are viewed from below. Fig. 15 is the dorsal abdominal plate viewed posteriorly to show the peculiar manner in which it is folded. Fig. 18 is the dorsal plate viewed from below.

Pl. X. Figs. 4, 5, 6, 10, 11, 12, 14 are the dorsal plates viewed from below. Figs. 15 and 16 are viewed from above with the uncus removed.

Pl. XI. All viewed from above with the uncus removed.

Pl. XII. Ditto.

Pl. XIII. Figs. 3, 22, 23, 24, ditto.

Pl. XIV. Figs. 2, 3, 7, 8, 9, 10, 11, 12, 13, ditto. Fig. 14 is a side view of the genital armature with the dorsal and ventral plates *in situ*. Fig. 14a is the dorsal plate viewed from below, Fig. 14c the ventral plate viewed from above, and Fig. 14b is the armature alone viewed from above.

Pl. XV. Figs. 4, 13, 14, 15 are viewed from above with the uncus removed. Figs. 16-28 are the ventral chitinous plates which surround the orifice of the bursa copulatrix, all showing the ventral side.

Explanation of Plate XVI

Pl. XVI. Figs. 1-13 are further examples of ♀ chitinous plates, viewed in the same way. The posterior end of these plates is in each case uppermost.

Figs. 14 to 21 are views of the copulatory seals found on the ♀ ♀ after pairing. Though these structures exhibit a certain degree of constancy in each species they are often scarcely distinguishable in species which are closely allied and therefore are of little use in just those cases where small recognisable peculiarities would be of value.

The magnification varies from about eight to twelve diameters, but as the actual size of the organs illustrated is not of much systematic importance I have not thought it necessary to state the magnification in each case.

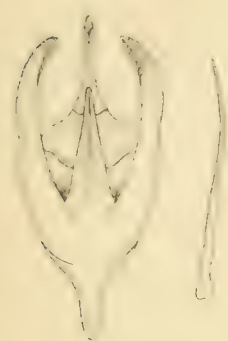


1. *lucida*.

2. *maculata*.

3. *lucida*.

4. *concolor*.



5. *admetus*.



6. *mahela*.



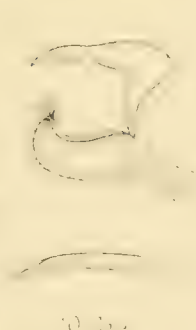
7. *ranavalona*.



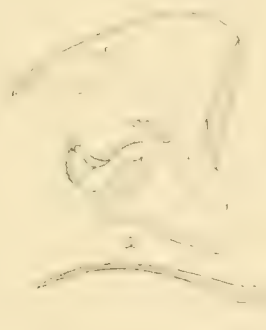
8. *machequena*.



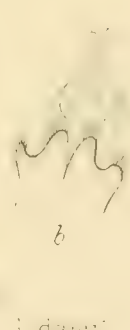
9. *obeira*.



10. *lucida*.



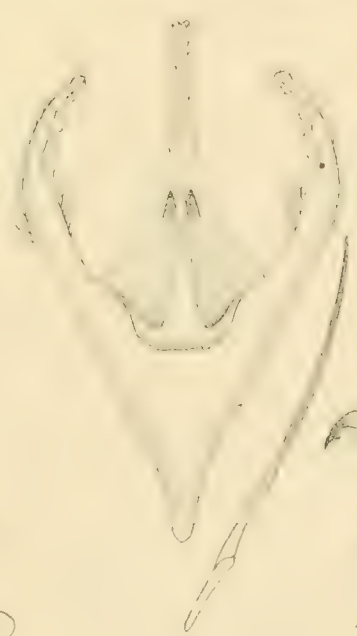
11. *lucida*.



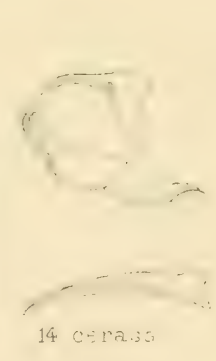
12. *lyata*.



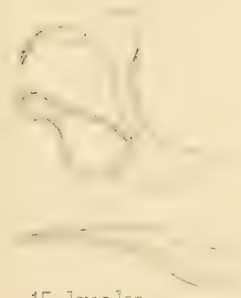
13. *lucida*.



17. *hova*.



14. *cerasa*.



15. *kraka*.



16. *unimaculata*.



18. *quirina*.

H. Eltringham del.

West, Newman lith.

GENITAL ARMATURES OF ACRAEA.



1. *egea*



2. *notasus*



3. *hypoleuca*



4. *chilo*



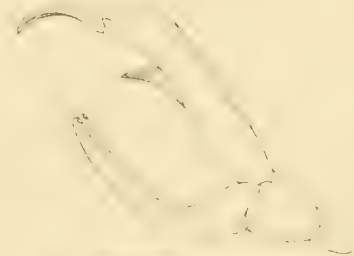
5. *anemosa*



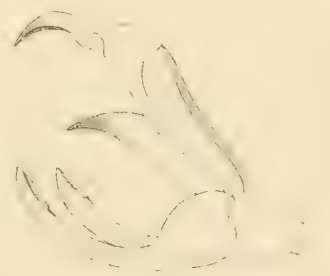
6. *anemosa*



7. *welwitschii*



8. *astrigera*



9. *turna*



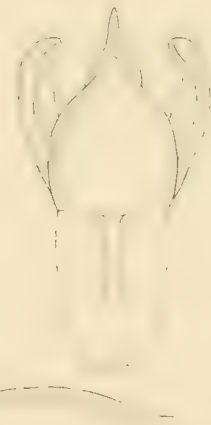
10. *rabbaiae*



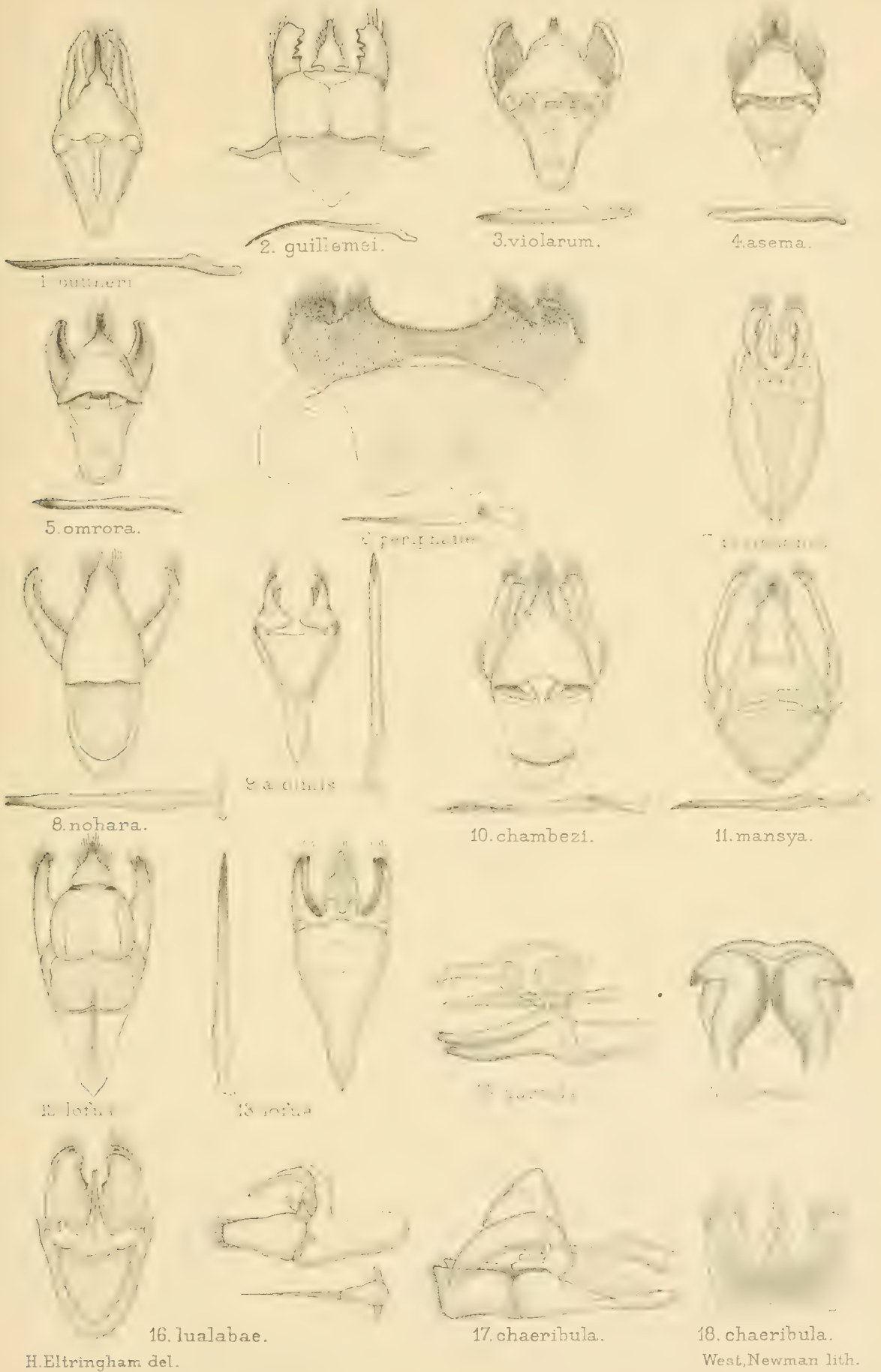
11. *zonata*



12. *cephus*



13. *petraea*



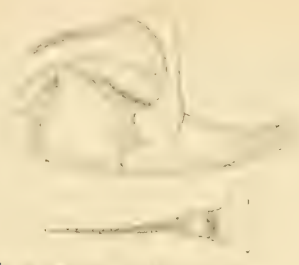
GENITAL ARMATURES OF ACRAEA.



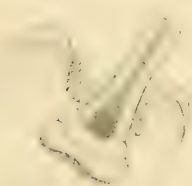
1. acrita acrita



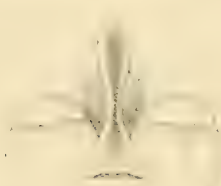
2. acrita manca



3. acrita pudorina



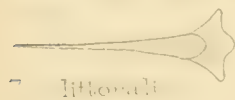
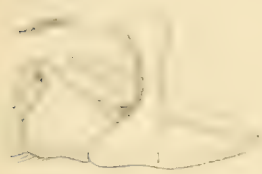
4. acrita acrita



5. acrita manca.



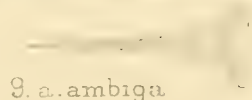
6. a. pudorina.



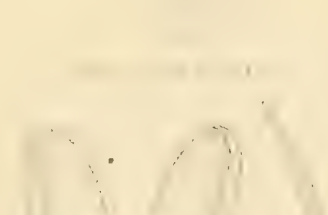
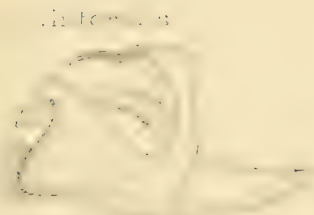
7. littoralis



8. a. bellona.



9. a. ambigua



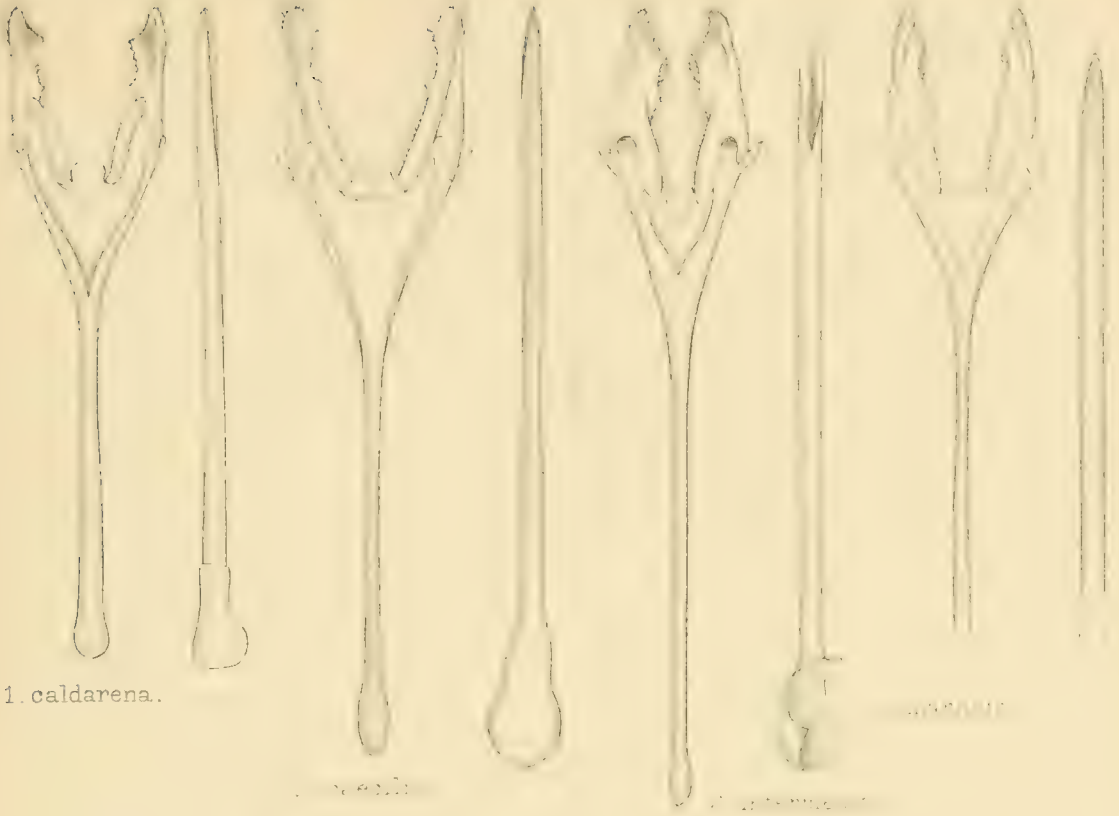
14. a. bella

H. Eltringham del.

15. stenobea.

16. aglaonice

West, Newman lith.



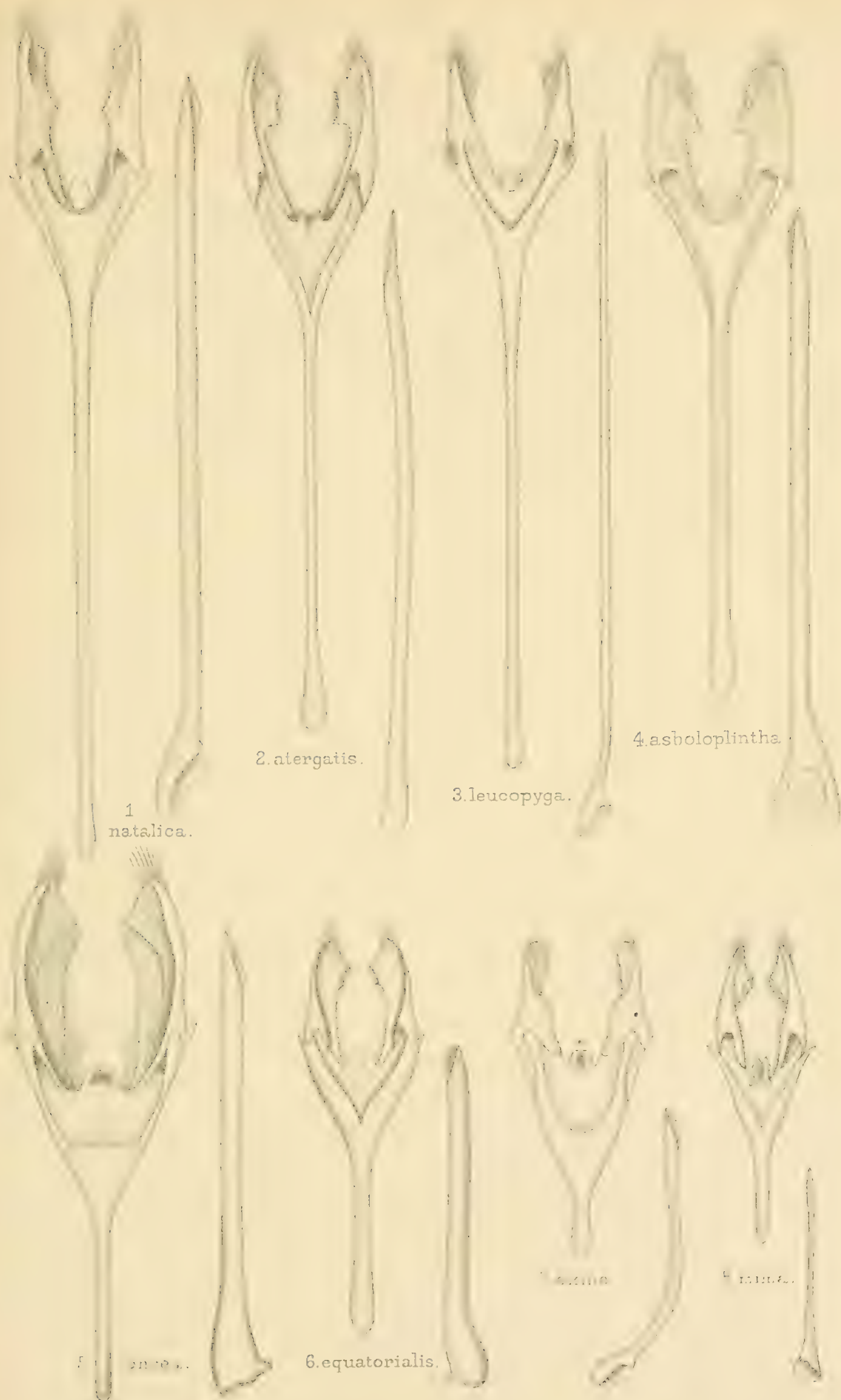
H. Eltringham del.

6. doubledayi arabica.

7. braesia.

West, Newman lith.

GENITAL ARMATURES OF ACRAEA.



H. Eltringham del.

West, Newman lith.

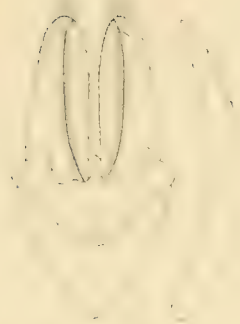
GENITAL ARMATURES OF ACRAEA.



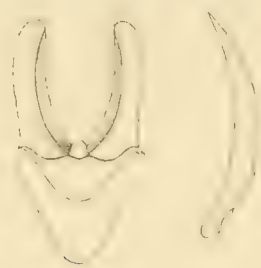
GENITAL ARMATURES OF ACRAEA.



1. *althoffi*



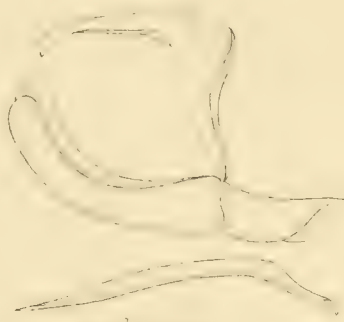
2. *pentaplois*



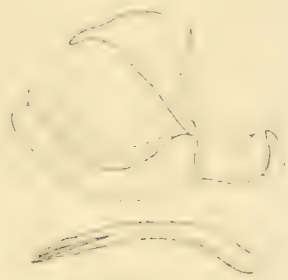
3. *vesperalis*



4. *ercedon*



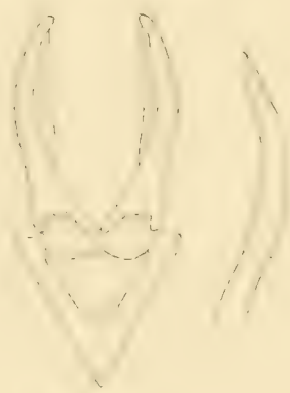
5. *cyathus*



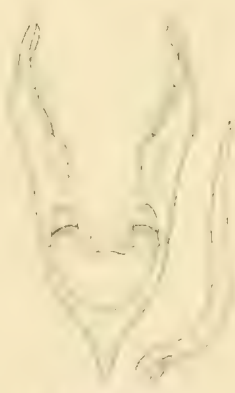
6. *lydia*



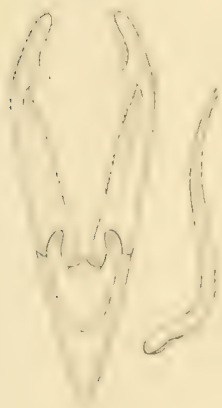
7. *rogersi*



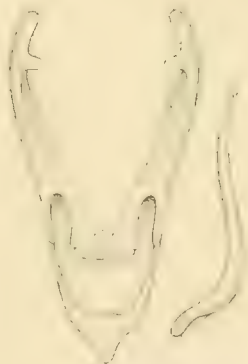
8. *phaeothoe*



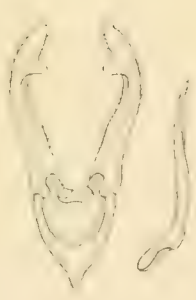
9. *thone*



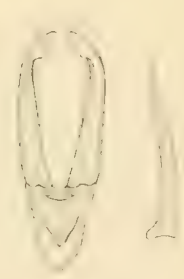
10. *jodutta*



11. *alciope*



12. *disjuncta*



13. *conjuncta*



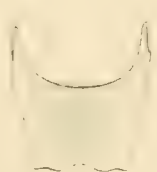
14. *satis*



14a. *satis*



14b. *satis*



14c. *satis*

H. Eltringham del.

West, Newman lith.



H. Eltringham del.

West, Newman lith.

GENITAL ARMATURES OF ACRAEA.

1. *cerasa* ♀.

2. *ranavalona* ♀.

3. *mahela* ♀.

4. *petraea* ♀.

5. *ansorgei* ♀.

6. *quirina* ♀.

7. *leucopyga* ♀.

8. *chaeribula* ♀.

9. *orestia*
humilis ♀.

10. *acrita*
acrita ♀.

11. *acrita*
bellona ♀.

12. *acrita*
manca ♀.

13. *diogenes* ♀.

14. *acrita* ♀.

15. *mirifica* ♀.

16. *wigginsi* ♀.

17. *egina areca* ♀.

18. *anemosa* ♀.

19. *nohara* ♀.

20. *insignis* ♀.

21. *obeira* ♀.

H. Eltringham del.

West, Newman lith.

GENITAL ARMATURES OF ACRAEA.

XV. *Synaposematic resemblance between Acraeinae larvae.*
 By G. D. H. CARPENTER, B.A., B.M. (Oxon.),
 F.E.S., Member of the Royal Society's Sleeping
 Sickness Commission.

[Read October 16th, 1912.]

WHEN breeding Acraeinae larvae I have on several occasions been deceived by the very close likeness existing between larvae of different species. In May 1911, on Damba Island, Victoria Nyanza, I found a company of *Acraea* larvae, and reared them to maturity. These were sent to Prof. Poulton, who identified them as *Acraea terpsichore*, L. Subsequently I found more larvae which I took to be the same as the former. The imagines bred from them were, however, identified by Prof. Poulton as *Acraea alicia*, E. M. Sharpe. The larvae were light green, shining, with head and legs black, with a transverse row of six rather long spinose spines across each segment, the four central ones being black, the lateral ones green and directed downwards. The pupae also appeared to be similar, but I did not take a written description.

The second instance is of some interest.

About the middle of June, 1911, on Damba Island, I found a company of small larvae feeding in the jungle on one leaf of the food-plant which appeared to be a species of nettle, stinging very feebly. I reared them, and the imagines supplied the first epigonic proof that *Acraea alciope*, Hew., and *Acraea aurivillii*, Staud., were male and female of the same species. These larvae were dull yellowish, with a lateral line of a more pronounced yellow, above which was a black line; from the latter, at right-angles, narrow black streaks ran dorsalwards, but not so far as the mid line. Head and legs black. Of the six spines on each segment the one on each side arising from the lateral line was yellowish, the rest black.

About two months later I found another company of similar larvae on a leaf (of the same plant) and reared them. To my astonishment the imagines were a totally different *Acraea*, whose name I knew not. Mr. Eltring-

TRANS. ENT. SOC. LOND. 1912.—PART IV. (FEB.)

ham identified them as *Acraea humilis*, E. M. Sharpe, and *Acraea orestia*, Hew., so that these two were shown to be forms of one species. Both larvae and pupae had been so like those of *A. alciope* that no suspicion had crossed my mind that they were of a different species.

The third instance of resemblance concerns larvae of the genus *Planema*. On August 17th, in the jungle of Damba Island, about 5 p.m., I saw a female *Planema macarista*, E. M. Sharpe, sitting on the leaf of a creeper, apparently just completing oviposition. I saw her lay the last egg, and then captured her. The eggs were laid all together on the upper surface of one leaf, but each distinct from the others. They were barrel-shaped, rather elongated, lemon yellow, attached to the leaf in an upright position by one extremity. Under a low power of the microscope the surface was seen to be longitudinally ribbed, with faintly marked cross bars between adjacent ribs. They were twenty in number. All except one hatched on August 25th; and the dates of the successive ecdyses of the larvae were Aug. 31st, Sept. 7th, Sept. 11th, and Sept. 16th. Unfortunately the majority of them died after this from an infectious disease, but one or two, though dwarfed pupated on Sept. 21st, these pupae subsequently dying.

The larvae were of a bright, shining, claret colour, with black head, legs and spines, the latter being rather long. Until more than half grown these larvae congregated together in a mass, whereby, under natural conditions, their conspicuousness would of course have been greatly accentuated. Though I obtained no imagines from this brood, the parent was undoubtedly *Pl. macarista*. [The parent was exhibited to the Society on Oct. 16th, 1912.—E. B. Poulton.]

The description of the pupa was as follows:—

Pinkish white, with black veins on the wings, and small black linear markings on the ventral surface. On the head are two widely separated pointed processes of the same colour as the body. From the dorsal surface of the abdomen project four pairs of long thin black spines, hooked at the tip, arising each from an orange pink tubercle, on each side of the outer aspect of the base of which is a black line; except the anterior tubercle which has only a short black line anteriorly to its base.

In October, one of my boys brought me from the Damba jungle on the leaves of a creeper of a different species from

the former, three larvae of identically the same appearance as recorded above. These pupated almost immediately, and the pupae also corresponded with the above description. I naturally concluded they also were *Pl. macarista*; and when the imagines emerged on Oct. 18th, and showed the orange band on the forewings and white on the hindwings, I concluded they were all males, and put them away without a careful examination. They were sent to Prof. Poulton in due course, who, to my great interest and astonishment, pronounced them to be two males and a female of *Planema poggei*, Dewitz., and not *Pl. macarista*.

At the beginning of 1912 I moved to Bugalla Island, forming one of the Sesse group in the N.W. corner of the Victoria Nyanza.

In April I found in the forest a larva which exactly corresponded with the description previously given,—claret-coloured with head, spines and legs black. It pupated on April 19th. I carefully looked at the pupa, and saw no difference in it from those of *Pl. macarista* and *poggei*. However, when the imago came out on May 1st, it was neither *macarista* nor *poggei*, but *Pl. arenaria*, E. M. Sharpe. I have since reared other specimens of this species from larvae found in the forest.

Here, then, we have larvae and pupae of three common and very conspicuous *Planemas* so closely resembling each other that I have not been able to distinguish any difference; though I have not had specimens of each to compare side by side.

July, 1912.

Note.—Later in the year Dr. Carpenter sent spirit specimens of some of the species referred to above. Concerning the larvae and pupae of *Pl. arenaria* he wrote Nov. 26, 1912:—

“The very young larvae are dull green with black anterior segments. After the first ecdysis the black becomes claret colour, and the green a sort of vague dull pink, which gradually becomes darker owing to the anterior claret tint spreading backwards, until the whole larva is of that tint. Its colour is then indistinguishable from that of *macarista* or *poggei*. Inasmuch as the larva of *macarista* is from birth onwards always the same, I think the facts show that the *arenaria* larva mimics that

of *macarista*. (I have only just discovered this, or would have told you when I made my remarks on Acraeine larvae.) The two pupae of *Pl. arenaria*, which might equally well be *macarista* or *poggei*, are very remarkably resistant to the cyanide bottle—even more so than the imagines! I put them in one evening; next morning I took them out and they were still, literally, kicking. Next evening I repeated the experiment with the same result! I had to chloroform them eventually.”

XVI. *The Life History of Pseudacraea eurytus hobleiyi*,
Neave. By G. D. H. CARPENTER, B.A., B.M.,
 (Oxon.), F.E.S.

[Read November 6th, 1912.]

WHEN I came out to Uganda as a member of the Royal Society's Sleeping Sickness Commission, I obtained permission from the Society to send the Lepidoptera which I might collect to Prof. Poulton; and it is to frequent correspondence with him that the following interesting result is due, which confirms the suggestion made by Dr. Karl Jordan that several forms of *Pseudacraea*, hitherto regarded as distinct species, would be found to be only polymorphic forms of one species.

At the beginning of 1912 my investigations into the bionomics of *Glossina* took me to Bugalla, one of the Sesse Islands—a group lying in the N.W. corner of the great Lake Victoria, some twenty-five miles S.W. of Entebbe. Here I soon found that *Pseudacraeae* of the three forms *terra*, *hobleiyi*, and *obscura*, together with intermediate forms, were extremely abundant; *terra* being more numerous than the other two put together. Everything was favourable for testing Dr. Jordan's suggestion. I obtained many females in succession, and put them in a large box with gauze front, hoping they would oviposit on the leaves which I put in; but none would lay. I was not at this time aware of the specific food-plant, and had not been able to find the food-plant of *Pseudacraea lucretia* which Prof. Poulton suggested would probably be the food-plant of the *hobleiyi* forms. Thinking that the atmospheric conditions in my hut, on top of an open grassy hill about 150 feet above the lake, were not suited to the forest-loving butterflies, I took the box down into the forest in which the *Pseudacraeas* fly, and stood it on supports in a large basin of water. Still the *Pseudacraeas* would not lay, and I was beginning to despair. However, on Sunday, June 16th, 1912, in the forest on the lake shore, I saw a *Pseudacraea* which I had been following about, and vainly trying to catch, settle on the under surface

of a leaf of a sapling, remain motionless, hanging from it with wings closed, and then fly away quickly. On looking at the leaf, to my intense pleasure, I found an egg on the middle of the under surface, still glistening with the secretion affixing it to the leaf, and of a dull yellow colour.

Let me here briefly state the main facts of the life-history. The *parent* was one of the intermediate forms so plentiful in the locality, being an "*obscura*" with large pale areas, and a reddish suffusion strongly marked on the under surface of the base of the hindwing, indicating an admixture of the "*hobleyi*" form.

The egg was laid on June 16.

The egg hatched. June 25.

1st larval ecdysis. July 1.

2nd do. July 7.

3rd do. July 14.

4th do. July 21.

Larva pupated. August 1.

Imago emerged. August 16.

The imago was a male, of the form "*terra*."

This in itself was sufficient to prove the identity of the forms "*obscura*," "*hobleyi*" and "*terra*." Further, the larva and pupa corresponded exactly with the coloured drawings of those of *Ps. imitator*, Trim., as drawn by Miss Margaret E. Fountaine, and published in the Transactions of the Ent. Soc., Part I, 1911 (pp. 57-59, and Pl. X), thus bringing this form into the same category. Miss Fountaine, however, makes no mention of the great difference in the appearance and habits of the young larva before and after the first ecdysis.

I will now proceed with the detailed description of the various stages.

The Ovum.—When freshly deposited on the 16th June, at noon, was of a uniform dull yellow colour. In shape it was spherical, but slightly flattened at point of attachment to the leaf: the surface being of a shagreen texture and deeply sculptured into hexagonal cells. On June 18th the periphery became clearer and less yellow, the centre opaque and dull pinkish. On the 24th the centre became black, and the outer parts white and semi-transparent.

The Larva.—Finally, without further change in the appearance of the ovum, at 9.15 a.m. on June 25th the young larva ate its way through the shell, and at once set

to work to consume the rest, which it accomplished in half an hour. The larva was rather "maggotty looking," being of a dull greenish white, and quite smooth, with no processes whatsoever on body or head, which was smooth shining black. In a very short while the larva took up its position along the edge of the leaf: and within a few hours, before it had eaten any of the leaf, had affixed to its back one or two pellets of excrement. The way in which it subsequently ate the leaf was interesting. It ate a small hole out of the edge, and then continued this down the side of a lateral rib of the leaf, subsequently doing the same on the other side of the rib, which was cut out from the rest of the leaf tissue but attached by its base. On this bare rib the young larva rested, and very soon had accumulated a large number of light brown pellets of excrement on its back and on the leaf around it. It always returned to rest at the same spot after feeding.

First Ecdysis.—The first ecdysis occurred on July 1st, with a complete change in appearance and habits. The larva no longer covered itself with pellets; and the appearance it took on persisted until after the fourth ecdysis; the characters acquired at the first being merely accentuated by the second and third ecdyses. The description of the larva after the third ecdysis is as follows. (See also Miss Fountaine's drawing.)

From first to fourth Ecdysis. Dorsally.—From behind the third segment to the posterior margin of the tenth, of the same green hue as the leaf, bordered with a pale brownish lateral line. Along this line, from each segment arises a spine, beset with smaller spines. The former are quite small except on segments two, three, eleven, and twelve, while that on segment two is the largest of all, and the pair diverge outwards and forwards like antlers, reaching the level of the front of the head. The pair on the third segment is similar but smaller. On segments two and three the dorsal green colour is much marked by pale brown areas continued inwards and backwards from the bases of the "horns" to meet mid-dorsally, making the hinder sides of a triangular area whose base is formed by a similar line extending transversely between the bases of the "horns." The first segment, dorsally, is mostly blackish, with a narrow antero-posterior mid-dorsal white line.

Posteriorly, there are two more pairs of enlarged spines, those on the eleventh segment being a little larger than those in the middle

of the body; and those on the twelfth midway in size between those of the second and third segments, and curved upwards and forwards. The colouring of the last two segments dorsally is ashy grey, dotted and mottled with blackish.

Laterally.—From behind the head until the eighth segment the larva is greenish black, but on the eighth segment this is bevelled off and gradually replaced by ashy grey, which is continued to the end of the body and there becomes continuous with the same colour dorsally. On the seventh segment the dark colour is interrupted by a large, raised, triangular whitish flap, with its base at the lateral line, and its apex running on to the base of the clasper, and there ending in a spine which points almost directly outwards at right angles to the body. There is a similar, dark, spine, on the base of the clasper of the seventh segment.

Head.—Greenish black, slightly bifid at top, beset with numerous small white spines. A narrow whitish band bordered with blackish starts on each side of mid-line at the crown, nearly meets its fellow in the middle of the front of the head, and curves away again below.

As regards its *habits* the larva has the same "homing" instinct as when much younger, always resting at the tip of a bare rib, and returning there after feeding. In the resting position the head and first five segments are raised off the leaf, and also all that part of the body behind the fourth pair of claspers, this being held up at quite a sharp angle, thus bringing more into evidence the lateral ashy colour of that part of the body. The larva is very sluggish and rarely moves except in connection with feeding.

The fourth Ecdysis.—This took place on July 21st and brought great change in appearance. The general colour was now a velvety purplish brown, and under a lens the whole integument was seen to be finely dusted with minute green dots. Here and there the purplish tint was replaced by greenish mottling. The flap on the side of the 7th segment, and the formerly grey area behind it, now became light pinkish brown, and just anterior to the flap were two raised circular dots of pure white. The first segment still bore a short white mid-dorsal line. With this ecdysis the spinous processes are considerably developed, those on segments four to nine, inclusive, being trifid at the extremity, the central prong slightly the largest. The pair on the second segment are even larger

than before, very thick, slightly flattened at the extremity, and are set with minute spines along the edges. They diverge upwards and outwards, and then turn forwards at an angle. The spines on the third segment are only a little larger than those on the middle segments.

The processes on the tenth segment are a little larger than those on the third, and flattened from side to side. The last pair of processes (on eleventh segment) are very large, and almost leaf-like, owing to the great flattening from side to side: the anterior and posterior edges have a frayed appearance, owing to their being set with small spines close together. These processes curve forwards and upwards.

The *head* is very spiny, ash-coloured in front, dark brown at sides.

Pupation.—On July 29th the larva spent the day curled up on a leaf eating nothing, and on the evening of the 30th suspended itself by the last pair of claspers from the tip of a leaf. On the 1st August, very early in the morning, before daybreak, it pupated. After this first experience I have reared numbers of these larvae, and it is very interesting to note that the preparations for pupation always occur in the same way. During one night, after remaining motionless in a curled-up posture on the leaf for some twelve hours, the larva will suspend itself from the leaf tip; and pupation takes place during the next night. Presumably by this adaptation the pupa gains by not being exposed to daylight till the protective green colour is fully developed, which takes some hours. The pupa corresponded exactly with the figure and description of that of *Ps. imitator* (loc. cit.), save only that the long processes from the head were not twisted but quite straight and parallel to each other.

The pupa in colour was leaf green, but the lower surface of the dorsum, and head, was slightly tinted with a light bluish grey bloom, as if to neutralise shadow. From the top of the head project a pair of flattened stalk-like processes, soldered together along adjacent edges except at the extreme tips, which are square. These processes immediately after the shedding of the larval skin are separate from each other, short, and curved dorsally. They appear to be straightened out to their final position and shape by the forcing into them of fluid, and the triangular processes on the abdomen are similarly distended, being very small at first. The cephalic

processes are about one-third of the length from top of head to end of abdomen. They make a large obtuse angle with the ventral surface of the body, but are in the same longitudinal plane. The body is very much flattened from side to side: each abdominal segment is slightly ridged in the mid-ventral line, the edge of the ridge being outlined in dark brown. From the dorsal surface of the abdomen project two large triangular processes, very thin from side to side, with edges outlined in dark brown. One, near the tip of the abdomen, is only half the size of that arising from the base of the abdomen, which has on its posterior edge a secondary triangular eminence.

Emergence of the Imago.—On Aug. 13 the antennae and limbs became very distinct through the pupal skin, and on Aug. 15 two dark patches showed on the forewing. These dark areas were the future tawny areas on the forewing of the imago, and soon assumed that colour, the rest of the wing then becoming black. On the morning of the 16th I was able to see how the wings were separated from the pupal skin by the secretion of air between the two, and very shortly the imago emerged; a male of the form hitherto described as a distinct species under the name *Pseudacraea terra*, Neave.

The fortunate observation that showed me the food-plant has enabled me to recognise it in the forest: it is the tree which serves as food for *Ps. lucretia*, but I have been unable to get full botanical specimens of flower, etc., for identification. I have now had no difficulty in getting captive females to oviposit on food-plant in the box in the forest, and up to the time of writing have secured one or more ova from six females of all three forms. The young larvae are rather delicate, and sometimes exhaust themselves so much by wandering about, spinning a silk foothold as they go, that they are unable to eat the hard dry leaf, and die. I have lost some of each brood save one, from this cause. Of one brood of four which all hatched on one day, the members all seemed equally thriving, when one, for some reason unknown, ceased feeding and shrivelled up. The food-plant being so dry, has to be renewed every other day, in spite of being kept in water. In spite of these disappointments, however, I hope to provide Prof. Poulton with specimens of each form reared from the other.

August 1912.

APPENDIX

[I have thought it well to add to this paper an account of specimens subsequently bred by Dr. Carpenter from three known females of the *obscura* form. All three were captured in the neighbourhood of Dr. Carpenter's camp on the east side of the centre of Bugalla Island. Having had the opportunity of comparing the whole of the "set" material, I have added a few notes to Dr. Carpenter's descriptions of the three parents and their offspring, but it has not been deemed necessary to indicate the slight additions.—E. B. POULTON.]

Series B.—Parent *obscura*, captured in the forest just above lake level, June 30, 1912 (laid four eggs).

Hatched.	1st Molt.	2nd.	3rd.	4th.	Pupated.	Imago.
1. July 12	July 20	July 26	Aug. 1	Aug. 7	Aug. 18	Sept. 3
2. July 12	July 21	July 26	Aug. 1	Aug. 9	Aug. 21	Sept. 6
3. July 13	July 21	July 26	Aug. 2	Aug. 10	Aug. 23	Sept. 8

Remarks.—The female parent has a pronounced pale forewing bar and the hindwing towards the base is paler than usual. The umber brown marking on the hindwing under surface is rather more developed than is usual in *obscura*.

1 is a ♀ *terra* with pale fulvous forewing bar which on the under side is nearly white.

2. A particularly interesting ♀ specimen. I do not think I have caught one quite like it. It would *take very little to make it into imitator*. The subapical bar is white, the inner marginal forewing pale area is very faintly marked, and a very little would cause it to disappear altogether; and to make the hindwing like *imitator* you only want a concentration of the pale colour into a band. The specimen bears much resemblance to the female parent, differing in the more pronounced forewing bar and the less pronounced pale areas on the rest of the expanse of both wings.

3. A ♀ *terra*, with rather more white suffusion on the forewing bar than in 1.

Traces of the umber marking appear in all three offspring, faintly in 1 and 3, distinct in 2 which resembles the parent in this respect.

Series C.—Parent a pale *obscura*, captured in the forest just above lake level, July 9, 1912 (only laid one egg, on July 9).

Hatched.	1st Moulth.	2nd.	3rd.	4th.	Pupated.	Imago.
July 17	July 24	July 30	Aug. 4	Aug. 10	Aug. 22	Sept. —

Remarks.—The parent is more worn than B, but apparently the chief pale area of both wings was much less pronounced than in the latter. The basal area of hindwing under surface is free from the umber brown marking.

1. Imago a ♂ *obscura* tending in the direction of *terra*. No umber marking on under surface.

Series D.—Parent *obscura-hobleji*, captured on flowers at the edge of the forest, July 15, 1912 (laid 13 ova).

One egg shrivelled, one failed to hatch, one larva died before first moult, another was a "wanderer" and died from exhaustion, another died during first moult and one after. Result seven pupae only.

Hatched.	1st Moulth.	2nd.	3rd.	4th.	Pupated.	Imago.
1. July 25	July 30	Aug. 4	Aug. 9	Aug. 15	Aug. 26	Sept. 10
2. July 25	July 30	Aug. 4	Aug. 9	Aug. 16	Aug. 28	Sept. 11
3. July 26	July 31	Aug. 4	Aug. 10	Aug. 16	Aug. 28	Sept. 12
4. July 26	July 31	Aug. 5	Aug. 10	Aug. 17	Aug. 29	Sept. 13
5. July 27	Aug. 1	Aug. 9	Aug. 14	Aug. 26	Sept. 4	Sept. 20
6. July 28	Aug. 4	Aug. 11	Aug. 17	Aug. 26	Sept. 6	Sept. 21
7. July 28	Aug. 5	Aug. 12	Aug. 20	Aug. 29	Sept. 7	Sept. 23

Remarks.—The parent is worn like C, but its pale areas had been apparently much like those of B, showing like the latter a tendency towards the female *hobleji* in the emphasis of the white bar. The umber marking is present, but faded, and it is difficult to estimate the original development of this marking.

1. ♀ *terra* tending towards *hobleji* ♀ in the paleness of all the forewing markings, especially on the under surface (where they are white), in the distinct umber marking on the under surface and the traces of a white bar along its outer margin.

2. ♀ *terra* with a trace of *obscura*. The umber marking barely visible.

3. ♀ *terra* with white forewing subapical bar. In this and the umber marking and the white areas on the under

surface of the forewing this specimen exhibits the same tendencies as 1.

4. ♀ *terra*, dark, with faintest trace of *obscura*; very similar to 2.

5. ♂ *obscura*, much like C 1, but tending rather more strongly in the direction of *terra*. Umber marking barely visible.

6. ♀ similar to 5, only tending rather more strongly towards *terra* on the hindwing upper surface.

7. ♂ similar to 5, but tending slightly more strongly towards *terra*. *Sept. 21, 1912.*

[The two families tabulated below, together with the notes upon them, were received in a letter from Dr. Carpenter, dated October 17, 1912.]

Series E.—Female parent a typical ♀ *hobleyi*, captured at the edge of the forest, July 24, 1912.

Hatched.	1st Moulth.	2nd.	3rd.	4th.	Pupated.	Imago.
1. Aug. 4	Aug. 11	Aug. 17	Aug. 27	Sept. 2	Sept. 14	Sept. 28
2. Aug. 4	Aug. 11	Aug. 20	Sept. 2	Sept. 9	Sept. 21	Oct. 4
3. Aug. 4	Aug. 13	Aug. 21	Sept. 3	Sept. 11	Sept. 22	Oct. 6

Remarks.—1. A typical (dwarfed) ♀ *hobleyi*.

2. ♀, approach to *imitator* like B 2.

3. ♂, a combination of *hobleyi*, *terra* and *obscura*, showing early stage towards No. 2.

The *hobleyi* influence is shown in both 2 and 3 by the strong development of the umber triangle on the hindwing under surface.

Two other ova shrivelled up without hatching.

Series F.—Female parent a typical *terra*, captured Aug. 2, at the edge of the forest.

Hatched.	1st Moulth.	2nd.	3rd.	4th.	5th.	Pupated.	Imago.
Aug. 11	Aug. 25	Sept. 1	Sept. 7	Sept. 14	Sept. 23	Oct. 4	Oct. 18

Remarks.—For some reason this larva grew slowly and put in an extra ecdysis on Sept. 23 (the 5th). The butterfly is a typical ♂ *terra*, except for the presence of a strongly marked indication of the umber triangle. The female parent was cut to pieces by ants which got into the cage, but the wings show no trace of the umber marking.

Series G.—Female parent a typical ♀ *hobleyi*, captured on flowers at the edge of the forest, Aug. 6, 1912.

Hatched.	1st Moul't.	2nd.	3rd.	4th.	Pupated.	Imago.
1. Aug. 17	Aug. 26	Sept. 1	Sept. 8	Sept. 14	Sept. 25	Oct. 9
2. Aug. 18	Aug. 27	Sept. 1	Sept. 8	Sept. 15	Sept. 26	Oct. 10
3. Aug. 18	Aug. 27	Sept. 1	Sept. 8	Sept. 16	Sept. 27	Oct. 11
4. Aug. 18	Aug. 27	Sept. 2	Sept. 8	Sept. 16	Sept. 27	Oct. 11
5. Aug. 18	Aug. 27	Sept. 2	Sept. 8	Sept. 16	Sept. 27	Oct. 11
6. Aug. 18	Aug. 27	Sept. 3	Sept. 8	Sept. 16	Sept. 27	Oct. 12

Remarks.—No. 2 a typical ♂ *hobleyi*. All the others typical female *hobleyi* except No. 4 and No. 6, in which the white bar of the hindwing is continued on to the forewing so as to meet, or nearly meet, the subapical white bar. This latter feature is seen in the parent.

There were, alas, *seven* other eggs, but six young larvæ died soon after hatching, one as a result of 3rd moult. All the survivors were pure *hobleyi*. 5 ♀♀, 1 ♂.

From the results I have obtained so far, it appears that form *hobleyi* has a very strong influence and it is *the most distinct form* (dominant in the non-Mendelian sense). Let me tabulate the following reasons.

I. An *enormous* number of otherwise more or less typical *terra* and *obscura* have a reddish tint at base of the hindwing under surface, and this applies still more to a large number of intermediates strongly tinted with *hobleyi*.

II. But though *terra-hobleyi*, and *obscura-hobleyi* are common enough, yet I have not yet, so far as I am aware, *sent you a single specimen* of *hobleyi-terra* or *hobleyi-obscura*—i. e. a form which you could say was *hobleyi* tainted with *obscura* or *terra*.

III. I have *not bred a pure hobleyi from terra or obscura*.

IV. Lastly (which seems most important) from two *hobleyi* parents I have bred, on the one hand, in series E, a typical *hobleyi* and two intermediates (no typical *terra* or *obscura*), on the other, in series G, six offspring, of which *not one was anything but typical hobleyi*! This seems extremely interesting, and I suppose indicates that *hobleyi* is the longest established form in Uganda at any rate.

I should, a day ago, have said that I supposed *hobleyi* had nearly become a true species—but yesterday I read Dr. Jordan's paper, and at the end he dealt with this very fallacy!

So *hobleyi* seems dominant over both *terra* and *obscura*; the former of the last two being also stronger than the latter. *Hobleyi*, thus, is the most interesting form to breed from, and I have now got another in confinement.

THREE WEEKS IN THE SUDAN.

FEBRUARY 1ST—22ND, 1909.

BY G. B. LONGSTAFF, M.A., M.D., F.R.C.P.

When one looks out of the train in the morning after the stifling night on the Nubian desert—somewhere between Berber and the River Atbara—a change in the appearance of the country is observed. A thin thorn-scrub, varied by occasional groups of Dom Palms, throws a slight veil over the nakedness of the desert. Occasionally a few gazelles create a flutter of excitement among the passengers, and when the sun gets up the mirage slowly develops, as if the horizon were first softened and then evaporated by the heat. From time to time stray butterflies are seen; these I took to be *Catopsilia florella*, F., though it is just possible that among them may have been *Teracolus protomedia*, Klug. During a short halt at Wad Ben Naga Station I tried to solve this problem, but the sense of anxious hurry lest the train should start, the swift flight of the butterflies, the strong wind, the blinding glare, and the great heat combined to frustrate my efforts, and I only succeeded in netting a male of *Tarucus theophrastus*, Fab., a "Blue" that I met with from Luxor to my southernmost point at Gebel Ein—a range of nearly 16° of latitude. On my return journey I took at Abu Hamed Station (about 130 miles north of the Atbara River) the Sphegid *Philanthus variegatus*, Spin., which was abundant at Khartûm, but which I did not see in Egypt. Also at Atbara Junction, 200 miles north of Khartûm, I took a male of *Rhynchium niloticum*, Sauss., a red and black Eumenid wasp that I had met with at Khartûm.

KHARTÛM.

Lat. 15° 35' N. 1200 ft. above sea level.

Khartûm is unlike any place that I have seen. Situated on the southern bank of the Blue Nile, just above its junction with the White Nile, it is a new city; it is, moreover, a European city, for the native population lives almost exclusively in mud villages on the outskirts. The palace in which Gordon lived and died is its oldest edifice, though built by Ismail Pasha, on either side of this, stretched along the river bank, is a long line of Government Offices and barracks interspersed with the comfortable houses of officials set each in its pleasant garden. Since every one, naturally enough, wished to have a bit of river frontage the length of the town is considerable, but its breadth approximates to Euclid's definition of a line, and its cross-streets starting from the river run vaguely into the desert.

Any description of Khartûm would be inadequate if it did not allude to the prevailing northerly wind, which is not only health giving, but entomologically speaking most important. Mr. H. L. Butler, the Curator of the Zoological Gardens, informed me that there is no continuous rainy season, but that heavy tropical downfalls are frequent in June, July, and August.

Khartûm is not altogether a pleasant place for collecting in. To the south is a specially barren* and wind-swept desert; the northern bank of the river is abandoned to barracks, railway works and dock-yard—for Khartûm is a naval port with a fleet of gunboats—hence one's operations were practically confined to the neighbourhood of the river bank above and below the city. Of the two localities, the best, though the most distant, was beyond the water-works, near the terminus of the tramway in the village of Burri. Here, among *Calotropis procera*, Willd., the wide-ranging *Danaiida chrysippus*, L., was common, and I was delighted to see alive for the first time the form *alcippus*, Cram. The white hind-wings of these beautiful butterflies are conspicuous in flight, and at once reminded me of the yet more beautiful *Acerca alboradiata*, Auriv., which I had seen in such numbers at the Victoria Falls four years before. From Cairo to Aswân I had come across a fair number of *chrysippus*, but all of the typical form. At Abu Simbel, in Nubia, I was surprised not to meet with it, since the *Calotropis* was there in plenty; it would be interesting to know what form occurs there.

The twenty-eight specimens brought home from Khartûm may be classified as follows:—

Typical *chrysippus*, L., 3 ♂.

chrysippus, L., but with the veins of the hind-wing dusted with white, 6 ♂, 2 ♀.

f. *alcippoides*, Moore, 4 ♂, 2 ♀.

f. *alcippus*, Cram., 5 ♂, 2 ♀.

f. *dorippus*, Klug, var. *albinus*, Lanzknecht, 1 ♂.

Of the total specimens seen, I estimated at the time that at least three-fourths were either *alcippus* or *alcippoides*.

The "musk-rat" odour was evident enough in many examples, about equally strong in both sexes, but in one ♂ the scent was compared to that of tobacco.

The next most conspicuous butterfly was *Papilio demodocus*, Esp., I believe the only one of the sub-family that occurs there. During

* Actually barren: potentially it is said to be fertile, a thin coating of sand covering a deep deposit of silt.

my stay it was not at all common, and I took but two (one very large and fine) and saw one or two others.

The *Pierinæ* were unquestionably the dominant group. The first of them to attract attention was *Catopsilia florella*, F., of which I took 5 ♂ and 10 ♀; it was quite abundant along the river bank above Burri. One female was so unusually pale in colour as to resemble a male. Of the five males taken all had a "sweet" or "luscious" scent, in some "faint," in others "decided."

Belenois mesentina, Cram., was also abundant, especially on cultivated ground; 10 ♂ and 19 ♀ were taken; some of the specimens of both sexes were very small. One ♀ resembled a ♂ in appearance. In some of the males I detected a slight scent, once described in my notes as "luscious," in others as "musky"; in two female specimens a slight musky scent seems to have been suspected. A male had lost a large piece out of each of the four wings.

In the bean fields near the junction of the Blue and White Niles *Colias marnoana*, Rogenh. (a miniature edition of our *C. hyale*), was common. In all fifteen were taken, including two white females. Two examples had symmetrical injuries affecting all four wings. A slight scent was noted in some specimens, described as "peculiar," "chocolate-like," or "clove-like." The observations were, however, not very definite, and in one case the scent was noted in a female specimen.

The prevalence of the genus *Teracolus* at Khartûm was in itself sufficient indication that we were within the limits of the Ethiopian fauna. None of the species were really common during my stay, but of *T. ephyia*, Klug, I secured four males and a female, missing several others; two of the males were veritable dwarfs. I also took a single dwarf male of *T. दौरα*, Klug. To the west of the town I took the only *T. chrysonome*, Klug, a ♀, that fell in my way. Lastly, I caught near the tennis-ground a female of *T. protomedia*, Klug, which seemed to me to have a faint scent like opium. At Burri I secured a specimen of the very beautiful *Callopietis eulimine*, Klug.

I did not come across a single Satyrid or Skipper in the Sudan! There was but one Nymphaline—the ubiquitous *Pyrameis cardui*, L., which was met with in the largest numbers on an exposed piece of ground at the very point of junction of the two rivers, exactly where one would have expected to see it. A fresh brood made its appearance on February 7th; one of these, a male, had an unusual under-side, very grey in tone, with but little dark shading, and without any black

in the ocelli. Even slight variations are rare in this remarkably constant species.

"Blues" were fairly numerous though of few species; *Polyommatus bæticus*, L., and *Tarucus theophrastus*, F., were both abundant, the first especially in bean fields, the second about *Acacia* bushes, or at flowers of *Ærva*. I fancied that a male of the first named butterfly had a slight scent like meadow-sweet, while one of the latter had a moderately strong, sweet, luscious odour. Of *Azanus ubaldus*, Cram., I took half-a-dozen, having previously come across a female in Nubia at Amâda (Lat. 20° 45' N.). Of the little *Chilades trochilus*, Frey (a species also met with at Aswân), I took one only.

Zizera lysimon, Hüb., was commonest on weeds in fields from which a crop had been removed, especially frequenting *Ærva* and *Arnebia*. On the other hand *Catochrysops eleusis*, Dem., was common about small, low-growing, white-prickled *Acacia* bushes on the edge of the desert. The Khartûm males were markedly bluer, less violet, than the Aswân specimens, which latter were chiefly taken about a pink-flowered *Lotus*.

Moths were not very numerous, but many of those taken were interesting.

The almost cosmopolitan *Utetheisa pulchella*, L., was fairly common on both sides of the town. The little Pyrale, *Noctuelia floralis*, Hübn. (which is like an "improved" *Herbula cespitalis*, Schiff.), occurred at the flowers of *Arnebia* sp., and the handsome *Deilephila livornica*, Esp., was taken at about 11 a.m. one hot sunny morning hovering at the flowers of *Echium* sp., both Hawkmoth and flower being in this case quite Palæarctic. All my other moths were victims of the seductive attractions of the electric lights. On some evenings, when the north wind was not too strong, these were much frequented, and while boxing moths on such occasions crowds of small flies entangled themselves in my scanty hair in a most irritating way. Amongst the moths *D. livornica*, Esp., turned up again, with it was a singular pale grey Syntomid, *Apisa canescens*, Walk.; also several Geometrids, including *Craspedia consentanea*, Walk. [which I also took at Dakkeh, 23° 15' N., and even as far north as Luxor, 25° 50' N.]; a very worn *Tephрина*, probably *disputaria*, Gn., var.; four specimens of *Peridela sudanata*, Warr. and Roth.;* also an "Emerald" which Mr. L. B. Prout says is a new *Chlorochroma*, as so often happens a

* *Nov. Zool.* vol. xii, 1905, p. 28, fig. 26.

unique example. There was in addition a male specimen of a Lymantriad which Sir George Hampson has described* as *Porthesia erythrostickta*, sp. n., and which he says resembles *Euproctis rufopunctata*, Walk. The *Noctuæ* were more remarkable than numerous; several specimens of *Caradrina* (*Laphygma*) *exigua*, Hübn., the larva of which feeding on cotton, berseem (a kind of clover), and *Hibiscus*, is quite a plague to the farmers of modern Egypt; a female of *Euxoa spinifera*, Hübn., another common Egyptian moth; four specimens of *Sesamia* [*Nonagria*] *cretica*, Led.; one of *S. apunctifera*, Hmps., the latter very distinctly marked, more so than any in the National Collection. Another cotton pest of Egypt, *Prodenia litura*, F. (*littoralis*, Bsd.) was represented by a single example. One of the most unexpected visitors was *Coprocucullia sublutea*, Graes.; the type of this species came from Eastern Turkestan, and the British Museum possesses but a single example, and that from the desert of Gobi in Northern China, no less than 30° N. and 70° E. of Khartûm! Sir George Hampson thinks that desert insects probably have an unusually large range, since desert conditions are similar over very large areas. Of *Spodoptera mauritia*, Bsd., two specimens turned up; of the common and very active Quadrifid *Acantholytes affinis*, Butl., only one. Of a Catocaline which is probably a new species of *Hypoglaucitis*, I took two, and Mrs. Longstaff another; a fourth specimen came to the lights of the steamer at Kasr Ibrîm, in Nubia (Lat. 22°35' N.) on January 29th. As might have been expected there were plenty of Pyrales among the frequenters of the lamps: two Galleriads, one the dingy *Lamoria imbellis*, Walk., four specimens; this is a widely distributed African species, ranging from Natal to the Nyanza; the other *Arenipses sabella*, Hmps., a species found in Arabia and on the Persian Gulf, of which I also got four. Other Pyrales were the almost cosmopolitan *Hellula hydralis*, Gn., one; *Noctuelia floralis*, Hübn., two; *Polyocha anerastiodes*, Warr. and Roth., one; the ubiquitous *Nomophila noctuella*, Schiff., three; *Noorda blitealis*, Walk., in abundance, a species that ranges from Ceylon over India to Aden; *Eromene ocella*, Haw., two, small and pale when compared with the large numbers seen in Egypt; and *Etiella*, n. sp., still in Sir George Hampson's hands. Also a Tortrix which Lord Walsingham says is the cosmopolitan *Bactra lanceolana*, Hübn.

For the determinations of the *Hymenoptera* met with I am

* Annals and Magazine of Nat. Hist., ser. 8, vol. v, May, 1910, p. 435.

greatly indebted to my old friend the Rev. F. D. Morice, who spent much time over them.

Ants did not make themselves very obvious. On the battlefield of Kerreri, during an extremely hurried visit, I managed to secure a worker of *Camponotus sericeus*, F. In the hotel at Khartûm my first capture was a worker of *C. sylvaticus*, Oliv., var. *maculatus*, F. In the Zoological Gardens close by I took on the trunk of a *Parkinsonia* three worker ants of which Mr. Morice writes: "This *Camponotus* is unknown to me, unless it be a form of *pubescens*, F.; the pilosity is very curious." I did not meet with either of these three ants in Egypt. In the western suburbs, toward Mogran, I found a worker of *Myrmecocystus viaticus*, Fab., running rapidly over the ground; in the same neighbourhood, under a stone, I found an ant of which Mr. Morice writes: "Genus? Species? Seems to belong to the *Poneridæ*, but I know nothing like it. With the general appearance of a Formicid, it has a long and powerful sting!"

Prenolepis longicornis, Latr., hunted on the luncheon table; while *Aphænogaster barbara*, L., was common in the garden; a male of the red and black Mutillid *Apterogyna savignyi*, Klug, was also taken in the hotel,

Of the difficult genus *Myzine* I met with three species on the Mogran hunting ground. The commonest appears to be *fasciculata*, which the late Mr. Ed. Saunders described from Biskra, of this I took seven specimens, all males; of *rousseii*, Guér. (also a Biskra insect), I took four males; lastly, there were two males which Mr. Morice thinks may be either *ægyptiaca*, Guér., or *guerini*, Lucas (= *latifasciata*, Palm.); perhaps it is the insect represented in fig. 27 of Savigny's Plate xv.

On the river bank to the east of the town, beyond the water works, I took a male of *Scolia erythrocephala*, Fab., a handsome insect, black with yellow-ringed abdomen, and purple-tipped wings, with base and costa ferruginous. On the other side of the town I took a female *Scolia* very similar, but with no ferruginous markings on the wings, which Mr. Morice thinks may be a variety, but possibly a new species. In the same locality as the last I got a small female *Scolia*, a greyish insect with a yellow abdomen, which Mr. Morice says is quite unlike any species known to him. Of *Elis senilis*, Fab., I brought home five males, varying greatly in size, some were taken on *Tacoma stans*, others on *Calotropis* near the rifle ranges.

The *Sphegidae* were numerous represented. The only *Ammophila* that I met with at Khartûm was a solitary female of *gracillima*,

Tasch. Of the handsome black, yellow-legged, long-waisted *Sceliphron spirifex*, L., I took two examples, one at Khartûm, the other in the train at Mut Mîr Station on the Sudan Railway; it also occurred at Luxor; my specimens are all females. *Philanthus coarctatus*, Spin., and *variegatus*, Spin., were both abundant towards Mogran, males greatly predominating. Other abundant small Sphegids were *Cerceris albicincta*, Klug, 28 ♂, 2 ♀, and *C. subimpressa*, Schlett., 24 ♂, 2 ♀; *C. annexa*, Kohl, was not so common, only 4 ♂ and 1 ♀ being taken. The great majority of these small Sphegids (as well as of Chrysidids and Flies), were obtained by sweeping the white fluffy Amarantaceous plant *Ærva* ? *javanica*, Juss.; but a few were obtained from the Boragineous *Arnebia* sp. The large bees and wasps on the other hand frequented *Tacoma stans*, *Acacia* and *Parkinsonia*, though a few occurred at *Calotropis*.

Of *Bembex lusca*, Spin., I secured one of each sex, of *B. mediterranea*, Handl., three males, one was taken on *Ærva*, one near Burri, where so far as I know that plant did not grow. Of the fine large *Spheg umbrosus*, Chrst, a black-bodied insect with clear wings, save at the base, a specimen (♂) was taken to the west of the town. In the same locality, on a small umbellate weed, I took a male *Tachytes*, a striking insect with a testaceous abdomen and dark borders to the wings. Mr. Morice thinks this may be the male of *superbiens*, Morice, the description of which will shortly appear in the Transactions of the Entomological Society; he compares it with *monetaria*, Smith, from India.

The difficult genus *Pompilus* was represented by ten males of a species of the *Aporus* group.

No social wasps were met with; on the other hand the genus *Eumenes* was much to the fore, by far the commonest species being the Egyptian blue-black *E. tinctor*, Chrst, of which I took ten males and four females; of *E. dimidiatipennis*, Sauss., and *E. lepelletieri*, Sauss., I took one male each; of *E. esuriens*, L., a truly hungry-looking, long-waisted, yellow, brown and black beast, I took one of each sex. Of the large black purple-winged *Rhynchium* ? *synagrioides*, Sauss., with its orange-tipped tail, I took two of each sex; it frequented the flowers of *Tacoma*. Of *R. cyanopterum*, Sauss., I found a solitary male at *Acacia* flowers. Of *R. niloticum*, Sauss., I took two males at Khartûm, another at Atbara junction 200 miles to the northward. A female *Odynerus* (*Lionotus*) belonging to the *parvulus* group may possibly prove to be a new species.

The handsome and conspicuous Carpenter-bees were as common

in the Sudan as in Egypt, but in addition to the strikingly dimorphic *Xylocopa æstuanis*, Linn., with its very different males and females, five males of *Xylocopa taschenbergi*, Vachal, turned up at Khartûm.

Of the leaf-cutters several species were met with. Two *Megachile flavipes*, Spin., were taken in the western suburbs, also at *Calotropis*, near the rifle ranges; this is a small species which I afterwards found quite commonly in Egypt; but *M. albocincta*, Radl., also an Egyptian species, was the commoner at Khartûm, frequenting the flowers of *Calotropis* and *Tacoma*, it is not, however, by any means easy to catch, still I secured three males and five females; of *M. argentata*, Fab., I took two males and a female, it also frequented *Tacoma*; at *Calotropis* and other flowers I took three specimens of *M. ? patellimana*, Spin. ? n. sp.

There were but two species of *Anthidium* among my captures, viz., *tessellatum*, Klug, of which I took two females; and ? *karschi*, Friese, of which I took a male, at least a bee which Mr. Morice says is probably the undescribed male of that species. I also got several specimens of both sexes of an *Anthophora* which Mr. Morice says is near *bimaculata*, Panz., and possibly = *byssina*, Klug, but that there perhaps may be more than one species among them. Three males of *Ceratina tarsata*, Morawitz, turned up at Khartûm.

At Abu Hamed (Lat. 19° 30' N.), 331 m. north of Khartûm, I took in the station-master's garden two females of *Nomia latipes*, Morawitz. At Khartûm I secured a male of *N. edentato*, Morawitz, and four females of the tiny yellow and black *Nomioides rotundiceps*, Handl.

Among those gem-like creatures, the *Chrysididae*, I was successful in getting some interesting insects, although I did not find them numerous. The brilliant, but widely distributed *Stilbum splendidum*, F., was the commonest, and I brought home twelve, some of them of the var. *amethystinum*, F. In the garden of the Cataract Hotel at Arwân (Upper Egypt), on January 26th, 1909, at about 5.30 in the afternoon, Miss Stracey called my attention to a number of *Stilbum splendidum* upon a *Parkinsonia* (an Australian tree with yellow flowers); they formed two clusters, one on a branch, the other on pods, consisting of 14 and 34 individuals respectively; they were sitting close together, quite still, and appeared to be stupid. Mr. Morice was much interested in my account of this observation, which he is not able to account for, and cannot exactly match by any other recorded case among the *Hymenoptera*. I mentioned the matter to Mr. F. C. Willcocks, F.E.S., of Cairo, but he said that he had never noticed anything

of the kind. Mr. Morice informs me that *Stilbum* infests the larvæ of the larger species of *Eumenes* (especially *dimidiatipennis*) exactly as Ichneumons do those of *Lepidoptera*.

Chrysis nasuta, Mocsary, is so similar to *Stilbum* in size and general appearance that I doubtless confused the two, and brought home but one male and three females; this is unfortunate, since it appears that Mocsary in 1902 described the male only, from Salisbury, Rhodesia; he has seen my specimens and believes them to be the two sexes of *nasuta*. *Chrysis pallidicornis*, Spin., was the commonest of the genus, and I secured seven specimens. It is variable in the colour of its tail, which may be red, reddish, or green (var. *chloris*, Mocs.). Of *C. fasciæata*, Klug, I took two; of the rainbow-coloured *E. aurifascia*, Brullé, one; the last named is, I am informed, a rarity, but it extends as far as the Cape. Of the common Egyptian *Hedychridium aheneum*, Dhlb., I took but one. The genus *Parnopes* was represented by a male and two females of what both Mr. Morice and M. du Buysson are agreed is a new species. Nearly all these Chrysidæ, but not the *Stilbum*, were obtained by sweeping *Ærva* ? *javanica*, Juss.

Insects of other Orders were few in number, thus but a single species of bug was met with, *Lygæus militaris*, F., taken among *Calotropis*; it appears a very bright red on the wing. Mr. Distant tells me that it is a common species.

A servant at the hotel brought me a large Mantid in spirit, *Hierodula bioculata*, Burm., she said that it had come to light at the beginning of February. Of the common North African locust, *Acrydium ægyptiacum*, L., I took one. A specimen of *Phaneroptera minima*, Br., came to light. A number of large earwigs, *Labidura riparia*, Pall., were found under a stone near the junction of the two rivers at Mogran; I had met with the same species near the Great Pyramid.

It is to be feared that little attention was paid to flies, and those that I brought home were not remarkable. Of *Agria* (*Sarcophaga*) *nuba*, Wied., a species also met with in Egypt, I took a pair. Among *Calotropis*, on the desert near the rifle ranges, I took two males and a female of *Dacus longistylus*, Wied., a wasp-like fly which Becker, in his work on Egyptian *Diptera*, attaches to the same plant. The brilliantly coloured blue-bottle, *Pycnosoma marginale*, Wied., was also common on *Calotropis*, but I suspect that a dead camel close by was even more attractive to it. A solitary *Anthrax* has not yet been provided with a name. Two specimens of *Rhinia* (*Idia*) *ænea*, Walk., complete a somewhat commonplace list.

(To be continued).

THREE WEEKS IN THE SUDAN.

BY G. B. LONGSTAFF, M.A., M.D., F.R.C.P.

(Continued from page 127).

Quite the most obvious Khartûm beetle was the dark brown and gold Cetoniid, *Pachnoda savignyi*, G. and P., which was very commonly to be seen flying around, or settled upon, the flowers of *Acacia* or *Tecoma*. When settled on a flower it was easily alarmed, and readily took to its wings. Many specimens in the British Museum have the brown replaced by yellow, but I saw none so coloured. At Burri I took flying about *Acacia* flowers two of the large green *Steraspis speciosa*, Klug, a species common in Upper Egypt, also at the same flowers a very finely coloured example of the magnificent *Julodis fimbriata*, Klug—green, yellow, and orange-red. The electric lights of the hotel attracted the small chafers, *Adoretus clypeatus*, Burm., and *Schizonyche* sp., as well as two specimens of the small scarab, *Catharsius sesostris*, Waterh. (= *pylades*, Péringuey), a species which ranges from Egypt to Sierra Leone, in one direction, and to South Africa in the other. Amongst the odds and ends attracted by light was an *Opatrum*, as usual dingy and nameless. Of *Himatismus villosus*, Haag, I found one on the Cathedral site, while three others came to light. Débris under bushes of *Calotropis* gave shelter to a *Sceliodis castaneus*, Esch., and a number of the abundant *Ocnera hispida*, Forsk.; of the last named Mrs. Duckett took one in the hotel. *Zophosis plana*, F., crawled upon the sand near the rifle ranges. Other beetles met with were *Coccinella 11-punctata*, L., and five specimens of *Bulæa lichat-schovii*, Hummel, var. *pallida*, Muls.

Unfortunately, when we reached Khartûm the dry season was so far advanced that with the water at such a low level it was not possible to make the usual excursion up the Blue Nile. However, after a good deal of difficulty I managed on February 15th, to hire a small oil-fed steam-launch, in which we got to Sôba, fifteen miles up stream, where mounds and brickbats are all that remains of the evidently once considerable capital of the Christian kingdom of Aloa. We landed on the north side of the river at about noon, and had to climb up a steep bank sheltered from the north wind, but with the sun's rays pouring down upon our backs with a power that I have seldom experienced, so that I fully expected to be struck down. At the top we found ourselves in a somewhat scanty thorn-scrub, but the cruel prickles, the great heat, and the strong wind, contributed to make collecting difficult.

With the exception of a female of the common *Eumenes tinctor*, Christ, found in the "Rest house," and two Sphegids, *Bembex mediterraneus*, Spin., and *Tachysphex fluctuatus*, Gerst., both females, all my captures were butterflies. Of the orange-tipped *Teracolus ephyia*, Klug, I took four males, in one of which I detected a sweet scent; a male *Belenois mesentina*, Cram., also had a sweet scent, which was lacking in two females. *Tarucus theophrastus*, F., was in abundance about bushes; one at rest was seen to move its wings after the manner common among Lycaenids. The take of the day was a nice little series of seven males of *Calopieris eulimine*, Klug, four of them in fine condition. This is not only a scarce, but a most beautiful insect; the orange-tips to its fore-wings are delicately shot with violet, while the veins on the under-side of the hind-wings are brilliant orange.

THE WHITE NILE.

Feb. 16th—Feb. 20th, 1909.

Unfortunately a projected journey as far as the Bahr-el-Ghazâl fell through, and I was able to carry out but a very short expedition, which, nevertheless, was the most interesting part of the whole tour.

The steamer was very comfortable and the manager civility itself: indeed so luxurious is travelling now-a-days that we were somewhat disposed to grumble when the supply of ice failed! Yet one might well plead extenuating circumstances, for aerated water without ice is apt to taste flat at 114° F. in the shade. It was, however, really tantalizing to be five days in a country of such possibilities, and yet to get in all less than twelve hours collecting. An entomologist ought, if possible, not to be pressed for time, and he ought to travel in a private steamer.

On February 16th, when about 40 miles above Khartûm, at 4.50 p.m., there being a gentle breeze from the *westward*, numerous lady-birds coming from the *eastward* settled upon the ship. All those examined proved to be *Coccinella 11-punctata*, L., a common Egyptian species. The flight lasted a little over an hour and there must have been hundreds of the beetles.*

During the greater part of the way the steamer passed through absolutely flat country elevated but little above the river. At this stage interest centred on the number and variety of large birds. We soon came to cranes—grey, demoiselle, and others—storks, ibis, herons; geese of several sorts; ducks and teal innumerable. On low muddy

* Proc. Ent. Soc. Lond., 1909, p. xxxii.

islands the cranes stood in rows like soldiers, each kind by itself, in scores or hundreds. Of pelicans we saw but few, of flamingoes possibly one or two. Then there was the marabout, which is a very handsome bird; so is the less common fish eagle. There were also kingfishers and other smaller fowl.

Crocodiles were common enough. We soon reached papyrus, at first a plant or two, but later plenty. With the papyrus appeared the hippopotamus. At one stopping place we were brought what we were told was "lotus"—but it was not the *Nelumbium*, but a white water-lily somewhat larger than our English *Nymphæa alba*, L.

Later we entered a very scanty forest which appeared to consist chiefly of acacias and other prickly trees.

The first night, at Getêna (63 m.), three *Noctuxæ* came to the steamer's lights, all Egyptian species:—*Agrotis segetum*, Schiff.; *Caradrina exigua*, Hübn.; and *Sesamia* [*Nonagria*] *cretica*, Led.

The following day, Feb. 17th, I got an hour and a half's collecting in the middle of the day at Ad Duwêm (125 m., lat. 14° 10' N.), but unfortunately much of this precious time was wasted in looking for good collecting ground. A female *Polyommatus bæticus*, L., two males of *Tarucus theophrastus*, F., and a male of *Azanus ubaldus*, Cram., were all Khartûm friends, as were *Belenois mesentina*, Cram., a male, *Teracolus दौरα*, Klug, of which I got one of each sex, and *T. protomedia*, Klug, of which I also got one of each sex. The last is a strong flier and I missed some in consequence. I did however add one species to my list in the shape of *Teracolus halimede*, Klug (var. *leo*, Butler), of which I got a male, but unfortunately damaged its hind-wing in pinching it. I also got the common wasp, *Eumenes tinctor*, Christ, a female, as well as *Icaria cincta*, Lep., also a female (Mr. Morice regards this as quite a tropical form); the Chrysid *Parnopes viridis*, Brullé; the fly *Agria* [*Sarcophaga*] *nuba*, Wied.; *Coccinella 11-punctata*, L.; and the widely distributed *Utetheisa pulchella*, L., of which several were seen. That afternoon, further up the river, a female *Xylocopa æstuans*, L., came on to the steamer and was captured by Miss Marriage.

On the return voyage three days later (Feb. 20), I got another two hours ashore at Ad Duwêm, from 8.45 to 10.45 a.m. Butterflies were fairly common in and near some gardens a short way up stream, but there was a strong wind and many of them were much torn. On this occasion *Danaïda chrysippus*, L., put in an appearance and I took a male, a fine specimen of the *alcippus* form with hardly any fulvous

upon the hind-wing; it had the characteristic odour of the species strongly developed. The most conspicuous insect however was *Teracolus protomedia*, Klug, which was common enough, but not very easy to catch in the high wind, though I managed to secure nine, all males. This butterfly seemed to be especially attracted by the red flowers of a *Cæsalpinia* in one of the gardens; in three of the specimens I detected a scent, slight but distinct, which was noted at the time as "a somewhat unpleasant stuffy smell"; "a slight scent, scarcely agreeable"; "distinct, dusty, hard to describe." The commonest butterfly would appear to have been *Teracolus दौरα*, Klug, of which I brought away five males and three females, one of the former being a dwarf; a female is recorded as having had a clove-pink scent, both in the field and at home. Of *T. halimede*, Klug, I got one female; of *T. (?) liagore*, Klug, a male. This last must be a very rare species. Dr. Dixey told me that he had never seen a specimen, but he thought that mine must be Klug's *liagore*. I also took five males of *Belenois mesentina*, Cram., three of which had a slight, somewhat hay-like scent.

The flowers of *Parkinsonia* attracted, besides the common *Xylocopa æstuans*, L., and *Eumenes tinctor*, Christ, the large handsome grey, black and white bee, *Anthophora nubrica*, Lep., of which I secured one of each sex; in company with these was an *Anthophora* that Mr. Morice thinks likely to be the undescribed male of *A. incana*, Klug, of which I seem to have taken the female at the same flowers in the suburbs of Khartûm.

Late at night we reached Kosti, 192 miles from Khartûm. This is the place that is often called after the name of the district, Gôz Abû Gûma. Quite a number of insects came to the lights of the steamer during the evening. Among them was *Cirphis loreyi*, Dup., a rarity in England, but common enough in Egypt. There were also two specimens (males) of a *Trichiura*, which Sir George Hampson thinks to be *obsoleta*, Klug. My Egyptian specimens quite agree with those in the British Museum from Cairo, but the two from Kosti are identical with three from the Blue Nile, and differ from the others in being smaller, darker, and of a blue-grey tint;* Then there was a little ochreous Noctuid, a species of *Antarchæa*, which is not in the British Museum, also a very distinct Lymantriid, a tiny moth nearly black, with an orange body spotted with black, which Sir George Hampson has described as *Euproctis xanthosoma*, sp.n., adding "very distinct

* Mr. G. T. Bethune-Baker has described this form as *Trichiura definita*, sp. n., Annals and Magazine of Nat. Hist., Ser. 8, Vol. vii, June, 1911, pp. 565—566.

from all other species known to me"*; also a *Schoenobius* and a *Chilo*, both of which appear to be new. With these novelties were the less remarkable *Endotricha consobrinalis*, Zell., and the very generally distributed *Hyposopygia mauritialis*, Gn., a species near the British *Pyrallis costalis*, Fab.

It is curious in how many places and under what different circumstances I have taken single specimens of *Acridium ægyptiacum*, L. Here it came to light, accompanied by other Acridians and crickets (not yet named), as well as the Mantid *Empusa egena*, Charp., and the cockroach, *Derocalymma porcellio*, Gerst.

The huge but dingy water-bug, *Limnogeton fieberi*, Mayr, was accompanied by a number of beetles, many of them obscure species that I have been unable to identify:—*Opatrum subsulcatum*, Reiche, in some numbers; *Opatrum* sp.; *Tanymecus* sp.; *Tæniolobus* sp.; *Chlænius* sp.; *Pæderus* sp.; *Luciola* sp., not in the British Museum; and lastly a male of the common ant *Myrmecocystus viaticus*, Fab.

At our most southerly point, Gebel Ên, Lat. 12° 40' N., 238 m. from Khartûm, I had a very short time for collecting. The thin scrub was *very* dry, there was scarcely any herbage, and but one or two shrubs were still in flower. The heat was intense, 114° F. in the shade, at the same time the sense of hurry was most disconcerting. Under these adverse conditions all that I succeeded in taking back to the ship were two dragon-flies and six butterflies. A male *Danaida chrysippus*, L., with the usual scent, differed from the type only in having the veins of the hind-wings margined with white; of two *Teracolus halimede*, Klug, one had a large piece missing from a hind-wing; two *T. eupompe*, Klug; and, lastly, a *T. evarne*, Klug, the only specimen that I met with. All these *Teracoli* were males, and the two last named species decidedly "dry."

That night we slept at Roseires (not to be confounded with the place of the same name on the Blue Nile). Here again insects came to light, viz.:—*Cirphis loreyi*, Dup., as before; the ubiquitous *Nomophila noctuella*, Schiff.; a yellowish Arctiid, superficially rather like a *Nona-gria*, not known to Sir George Hampson; another specimen of the new *Antarchæa* previously taken at Kosti; a Lymantriid which Sir George Hampson considers to be the male of an undescribed female from British East Africa, and has described as *Lælia seminuda*, sp. n.†; and the Acridian *Oxyoryphus compressicornis*, Latr. The next morning a

* Annals and Magazine of Nat. Hist., Ser. 8, Vol. V., May, 1910, p. 437.

† Annals and Magazine of Nat. Hist., Ser. 8, Vol. V., May, 1910, p. 441.

Mantid, *Calidomantis savignyi*, Sauss., was found on a water-lily on the breakfast table; doubtless it had been attracted by the lights the night before. Several beetles also visited the lights—which were acetylene and not very brilliant—*Coccinella rufescens*, Muls.; *Brachinus* sp.; *Ora* sp.; *Tanymecus* sp. (the same as at Kosti); *Pæderus* sp.; and *Chlænius* sp.

The next morning we left Hillet Abbas at 10.30 a.m., a bare, miserable place, not improved entomologically by a tearing wind. However, besides three dragon-flies, I managed to get hold of one *Azanus ubaldus*, Cram., a female; a female *Teracolus दौरα*, Klug; and two males of *T. kalimede*, Klug, var. *leo*, Butler. This last is a delicate insect, white with a cadmium-yellow flush; it appears to have a slight somewhat disagreeable scent. I missed a Blue, probably *Polyommatus bæticus*, L.

On our way down stream again I got three quarters of an hour's collecting at Kosti in a small vegetable garden close to the landing place. Only two butterflies rewarded my efforts, a male *Zizera lysimon*, Hübn., and a male *Danaida chrysippus*, L., the last, taken at onion flowers, was almost typical, with merely a little white along the veins of the hind-wings. It proved tenacious of life and had the usual characteristic scent.

The flowers of carrot yielded a female of *Elis senilis*, F., a Scoliid of which I had taken several males at Khartûm. When I first met with this in Egypt I had no idea that the sexes were conspecific. The male, very variable in size, is smaller, its abdomen orange-red, ringed with black, its head and thorax covered with grey pubescence (whence the name), its wings transparent. The female is larger and stouter: the pubescence orange, abdomen blue-black, and about two-fifths of the wings purple. On the same flowers I took the beautiful *Eumenes lepelletieri*, Sauss., one of each sex, a fine yellow insect with a black cross on its abdomen; a pair of the yellow-eyed *Tachysphex fluctuatus*, Gerst.; a male of *Odynerus* (?) *bellatulus*, Sauss.; also a Pompilid which puzzles Mr. Morice, but which he thinks may be *Salix bretonii*, Guér. With these was an Egyptian grasshopper, *Chrotogonius lugubris*, Blanch.

We stopped at Tawila (185 m. above Khartûm) to fill up with fuel. Fortunately the process of "wooding" was a slow one and I got ashore from 1.0 to 4.30 p.m. The terrain was covered with a scanty scrub just above the level of the river; the small trees were mostly acacias, but all were exasperatingly thorny. Collecting was good, in spite of

the wind, nearly all my captures being made at one or two late acacias that were still in flower. The sense of hurry and the desire to catch as many things as the time permitted interfered with observation. In the midst of my work I tore my net very badly, but fortunately the steamer was not far off and I ran back to get a new one; curiously enough, two of my best specimens were taken with the damaged net, in spite of a hole quite a foot across. Most of my captures were by this time old friends, e.g., *Tarucus theophrastus*, Fab., two males and a female; *Belenois mesentina*, Cram., a solitary male; *Teracolus proto-media*, Klug, a male with a sweet scent; *T. दौरα*, Klug, three males and two females, one of each sex was unusually large, but on the other hand one female was a veritable dwarf; *T. eupompe*, Klug, seven males and one female; *T. halimede*, Klug, var. *leo*, Butl., two males and one female.

But besides these old friends I made some new acquaintances, to wit, *Teracolus phisadia*, Godt., six of each sex. The male is very pretty and delicately coloured, being pink with a black border to the wings, one of them was noted as having a sweet luscious scent; the female is sulphur yellow. I also got two *T. calais*, Cram. (a Delhi acquaintance), one of them small. Of *Herpænia eriphia*, Godt., I took one of each sex, both quite remarkably small specimens. Two old South African friends also turned up, *Leuceronia buquetii*, Bsd., a female, and three *Virachola antalus*, Hopff.

The only moth that I saw was *Sterrrha sacraria*, Linn., which I kicked up. There were but two Aculeates in my bag: a male *Eumenes tinctor*, Christ, and a female *E. lepelletieri*, Sauss.

Late that afternoon we stopped at Fachi Shoya, on Abba Island (176 m. above Khartûm), where the Mahdi used to live. I landed and collected from 5.15 p.m. to dusk. The following were for the most part disturbed from grass, &c.:—a nearly typical male *Danaïda chrysippus*, L., only slightly dusted with white; it was tenacious of life and had the characteristic scent; five females of *Teracolus halimede*, Klug; also a female of *T. eupompe*, Klug, lacking the red tip. It is notable that at Tawila, earlier in the day, males prevailed over females. The female of *halimede* is variable, the ground colour is usually white, but in a specimen from Ad Duwêm it was yellow; sometimes there is a mere trace of the yellow flush, but occasionally it approaches that of the male, moreover the black markings vary in intensity.

At Fachi Shoya I got a single moth, a Lithosiid which is almost certainly a new species. A native sailor brought me two beetles, *Rhytina scabriuscula*, Esch., and Mrs. Longstaff found a beetle in our

cabin, *Pheropsophus* (?) *lafertei*, Arrow. That night there was a violent gale from the north, which blew out of my cabin two of my precious Tawila butterflies in their papers! What they were I shall never know, but have an impression that they were *Teracoli* of which I had others. In spite of the gale a Catocaline Noctuid came to light, *Pandesma quenavadi*, Gn., a common Indian form.

On my last night on the White Nile, Feb. 20th, above Geteina, *Phyllodromia treitliana*, Wern., an uncommon cockroach, came to light, and Herr Schwabacher gave me a *Cirphis loreyi*, Dup.

The fauna of the Sudân is extremely interesting from the point of view of geographical distribution. It may indeed be compared to Switzerland, in which country French, Germans, and Italians meet. The insect fauna of Egypt is essentially Palæarctic in character; the great majority of its insects are also to be found in Southern Europe. As examples of Palæarctic species extending through Egypt to the Sudân the following may be mentioned:—*Cirphis loreyi*, Dup.; *Euroa spinifera*, Hb.; *Caradrina exigua*, Hb.; *Deilephila livornica*, Esp.; *Xylocopa æstuanis*, L.; *Eumenes tinctor*, Christ; *Coccinella 11-punctata*, L.

Another element is the Oriental, which would appear to have reached the Sudân through Persia by way of Arabia. Such insects are *Teracolus calais*, Cram.; *Pandesma quenavadi*, Gn.; *Noorda blitealis*, Walk.; *Arenipses sabella*, Hmps.; and *Copicucullia sublutea*, Graes. (though perhaps this last may be reckoned as Palæarctic rather than Oriental).

Other Sudân insects have a far wider distribution such as *Danaïda chrysippus*, L.; *Polyommatus bæticus*, L.; *Zizera lysimon*, Hübn.; *Utetheisa pulchella*, L.; *Eromene ocella*, Haw.; and *Sterrhia sacraria*, L.

Together with these are the almost cosmopolitan *Pyrameis cardui*, L.; *Agrotis upsilon*, Rott.; and *Nomophila noctuella*, Schiff.

Doubtless many at any rate, if not all, of these common insects are to be found in Uganda, yet the fauna of that country may well be considered to be characteristically Ethiopian. From Uganda not a few Ethiopian species have passed to the Sudân, where they meet the Palæarctic and Oriental insects previously named. Such are *Papilio demodocus*, Esp.; *Catopsilia florella*, F.; *Leuceronia buquetii*, Bsd.; *Herpænia eriphia*, Godt.; *Calopieris eulimine*, Klug; *Teracolus proto-media*, Klug; *T. daïra*, Klug; *T. chrysonome*, Klug; *T. ephyia*, Klug; *T. halimede*, Klug; *T. phisadia*, Godt.; *T. eupompe*, Klug; *T. liagore*, Klug; and *T. exarue*, Klug; *Virachola antulus*, Hopff.; and *Lamoria imbellia*, Walk.

So far as my slight opportunities enabled me to hazard an opinion, the Palæarctic fauna of Egypt extends almost unchanged as far south as Wady Halfa. It would, of course, require much study on the spot to define the line, if such there be, north of which Ethiopian species do not range. The line of demarcation may safely be assumed to be different for different species. For instance, the African butterfly, *Catochrysops eleusis*, Dem., is as abundant at Abu Simbel in Nubia, and even at Assouân, as it is at Khartûm; one or two Sudanese moths also, as I have mentioned, extend into Nubia; nevertheless, I was distinctly impressed with the idea that it was south of the Nubian desert, roughly speaking at the River Atbara, say $17^{\circ} 30' N.$, that I first came in contact with the Ethiopian fauna, though, on the other hand, forms which occur in the Palæarctic Region were common enough at Khartûm and even south of it, but these were for the most part wide-ranging, if not actually cosmopolitan species.

The Hon. N. C. Rothschild stayed for some time at Nakheila, on the Atbara, in 1904, where he and his companions, the Hon. F. R. Henley and Mr. A. F. N. Wollaston, took several species of *Teracolus* and other insects that I met with at Khartûm or South of it.* Mr. Rothschild informs me that he thinks the *Teracoli* probably extend as far northwards as the thin Acacia scrub, that is to say to some point north of the Atbara, but south of Wady Halfa.

It is interesting to compare with my captures those of Mr. W. L. S. Loat, F.Z.S.,† in 1901 and 1902. Many species are common to the two lists, but not only had he somewhat more time than was at my disposal, but a large number of his insects were taken as far south as lat. $5^{\circ} N.$, whereas I did not get beyond $12^{\circ} 40' N.$; it was therefore only to be expected that, as compared with my captures, his were more strongly Ethiopian, including, e.g., a *Neptis* and two species of *Acrava*. Mr. Loat took 11 species of *Teracolus*, I took 10; six species are common to the two lists.

As regards the *Hymenoptera* Mr. Morice writes me:—"I may say that the only insects I had previously examined from Khartûm and the White Nile, were those taken by the Swedish expedition five or six years ago, and you have certainly got much more material than they did—though, strange to say, hardly any of the same species!"

Highlands, Putney Heath:

June, 1911.

* *Novitates Zoologicae*, 1905, pp. 21—33

† *On Lepidoptera from the White Nile*, by F. A. Dixey, M.D., F.R.S., Trans. Ent. Soc., Lond., 1903, p. 141.

II. *The Butterflies of the White Nile: a study in Geographical Distribution.* By G. B. LONGSTAFF, M.A., M.D., F.E.S.

[Read November 20th, 1912.]

PLATE II.

BIBLIOGRAPHY.

(Works dealing specially with the White Nile District are marked with an asterisk.)

1. AURIVILLIUS, CHR. *Rhopalocera Aethiopica*, Stockholm (1898).
- *2. AURIVILLIUS, CHR. Results of the Swedish Zoological Expedition to Egypt and the White Nile, 1901, under the direction of L. A. Jägerskiöld. Part I. *Lepidoptera*, pp. 1-9.
(The specimens were collected by J. Trägårdh.)
3. AURIVILLIUS, CHR. *Die Gross-schmetterlinge der Erde*, von Dr. Adalbert Seitz. *Fauna Africana* (1908—).
4. BINGHAM, C. T. *Fauna of British India: Butterflies*, vol. i, 1905; vol. ii, 1907.
- *5. BUTLER, A. G. A Revision of the Lepidopterous Genus *Teracolus*, with Descriptions of New Species. *Proc. Zool. Soc. Lond.*, 1876, pp. 126-165.
(This contains references to Consul Petherick's captures on the White Nile.)
6. BUTLER, A. G. On a Collection of *Lepidoptera* made by Major J. W. Yerbury at or near Aden (in 1883-1884). *Proc. Zool. Soc. Lond.*, 1884, pp. 478-503.
7. BUTLER, A. G. An account of two Collections of *Lepidoptera* recently received from Somaliland. *Proc. Zool. Soc. Lond.*, 1886, pp. 756-766.
(A small collection made by Major Yerbury in 1884; a larger collection made by Messrs. J. G. Thrupp, Lort-Phillips, and James, 1884-1885.)
8. BUTLER, A. G. On the Butterflies obtained in Arabia and Somaliland by Capt. Chas. G. Nurse and Col. J. W. Yerbury. *Proc. Zool. Soc. Lond.*, 1896, pp. 242-257.

TRANS. ENT. SOC. LOND. 1913.—PART I. (JUNE)

9. BUTLER, A. G. A Revision of the Species of Butterflies belonging to the genus *Teracolus*, Swains. Ann. and Mag. of Nat. Hist., 6th series, vol. xx, 1897, pp. 385-399, 451-473, 495-507.
- *10. BUTLER, A. G. On some Butterflies from the White Nile collected by Capt. H. N. Dunn, of the Egyptian Army. Proc. Zool. Soc. Lond., 1901, p. 25.
(Capt. Dunn collected on the Bahr el-Zarâfa.)
11. DIXEY, F. A. On a Collection of Insects and Arachnids made in 1895 and 1897 by Mr. C. V. A. Peel, F.Z.S., in Somaliland, with Descriptions of New Species. Lepidoptera Rhopalocera. Proc. Zool. Soc. Lond., 1900, pp. 10-17.
12. DIXEY, F. A. On a Collection of Insects and Arachnids made by Mr. E. N. Bennett in Socotra, with Descriptions of New Species. Lepidoptera. Proc. Zool. Soc. Lond., 1898, pp. 372-383.
- *13. DIXEY, F. A. On Lepidoptera from the White Nile collected by Mr. W. L. S. Loat, F.Z.S.; together with further notes on Seasonal Dimorphism in Butterflies. Trans. Ent. Soc. Lond., 1903, pp. 141-163.
(I have had the great advantage of hearing Dr. Dixey's later views as to some of the more obscure species dealt with in these papers.)
14. ELTRINGHAM, H. A Monograph of the African Species of the Genus, *Acraea*, Fab., with a supplement on those of the Oriental Region. Trans. Ent. Soc. Lond., 1912, pp. 1-374.
15. KLUG, F. Symbolae Physicae (1829).
- *16. LONGSTAFF, G. B. Butterfly Hunting in Many Lands (1912).
(The account of my first visit to the White Nile will be found on pp. 415-423.)
17. MANDERS, N. Entomological Field Notes at Suakin. Ent. Month. Mag., xxii, pp. 277-279 (1886).
18. ROTHSCHILD, The Hon. N. CH. Lepidoptera from Egypt and the Soudan (1900, 1901). Nov. Zool., vol. viii, pp. 426-434 (1901).
19. ROTHSCHILD, The Hon. N. CH., and WARREN, W. Lepidoptera from the Soudan (1904). Nov. Zool., vol. xii, pp. 21-31 (1905).
20. SHARPE, Miss EMILY MARY BOWDLER. List of Lepidoptera collected in Somaliland by Mrs. E. Lort-

Phillips. Proc. Zool. Soc. Lond., 1896, pp. 523-529.

21. SHARPE, Miss E. M. B. A List of the Lepidopterous Insects collected on the Red Sea, in the neighbourhood of Suakim, by Mr. Alfred J. Cholmley. Proc. Zool. Soc. Lond., 1897, pp. 775-777.
22. SHARPE, Miss E. M. B. A Monograph of *Teracolus* (1901).
23. TRIMEN, R. South African Butterflies, 3 vols. (1887-89).
- *24. TRIMEN, R. Manuscript Notes on Lepidoptera collected by Mr. F. C. Selous on the White Nile and in the Southern Bahr el-Ghazâl, between Feb. 17th and Apr. 10th, 1911.
(Kindly lent by the author.)
25. WALKER, F. A List of the Butterflies collected by J. H. Lord, Esq., in Egypt, along the African Shore of the Red Sea, and in Arabia, with descriptions of the Species new to Science. Entomologist, vol. v, pp. 48-57 (1870).
(It is said that the types were claimed by the then Khedive and placed by him in the museum attached to the School of Medicine at Cairo, where they perished owing to neglect. This paper promised to be interesting; but Walker's statement that such conspicuous butterflies as *Teracolus protomedia*, *T. eupompe* and *T. halimede* were taken by Lord in the Cairo district, convinces me that either he or Lord had muddled up the localities of the insects dealt with, since the butterflies named are not known to occur within several hundred miles of Cairo. The paper therefore is worthless for my purpose.)
26. YERBURY, J. W. The Butterflies of Aden and neighbourhood, with some Notes on their Habits. Journ. Bombay Nat. Hist. Soc., 1892.

The Area dealt with.

Strictly speaking the name White Nile should be confined to that part of the river (Bahr al-Abyad) between the mouth of the Blue Nile (Bahr al-Azrak) opposite to Omdurman and nearly two miles below Khartûm, and Lake Nô, where the Bahr al-Ghazâl joins the Bahr al-

Gebel. In practice, however, the name is usually held to include the Bahr al-Gebel from Gondokoro or Rejâf, the head of navigation [Lat. $4^{\circ} 45' N.$], down to Lake Nô, and this is the sense in which the name is here used. Moreover the Bahr al-Zarâfa, which is practically a loop of the Bahr al-Gebel, running more or less parallel to it for about $21\frac{1}{2}^{\circ}$ of latitude, and never more than forty miles distant, will here be treated as part of the same district. Khartûm again, though strictly speaking it stands upon the Blue Nile, is included for reasons of convenience, being the port of entry into the region.

On the other hand the Bahr al-Ghazâl, draining as it does the large area between the Bahr al-Gebel and the Congo basin, is *not* dealt with here. From what is known of its fauna it would appear to comprise more insects characteristic of Central and Southern Africa, than the fauna we are here considering.

The region thus defined lends itself to treatment as a unit, both from the fact that it is served by the convenient Government steamers and by the fact that it is throughout fairly uniform in character. At Gebel Auli and at Gebel Ên are small hills of igneous rock, while many similar hills occur at Lâdô and above, but with these exceptions the country is level.

Between Khartûm and Abba Island the country is for the most part bare and open. A few *Acacia* (commonly called *Mimosa*) trees or shrubs are here conspicuous by their rarity. Another small tree or shrub commonly met with on the desert is the "Nabbak," a species of Buckthorn, *Zizyphus mucronata*, Wild [Nat. Ord. *Rhamnaceae*],—a rather graceful tree whose white stems give it a Birch-like character, but it is defended by a peculiarly malicious scheme of thorns, which are arranged in pairs, one straight, the other curved. The *Acacias* extend right up to Gondokoro. Among the shrubs especially interesting to the Entomologist, are various *Capers* and other members of the order *Capparidaceae*. They are closely associated with *Pierinae*, whose larvae feed upon them. Another shrub, especially common on and near Abba Island, is *Salvadora persica*, Linn., also much frequented by *Pierines*; it has numerous insignificant green flowers. A remarkable plant with a wide range in the district is *Vitis* (*Cissus*) *quadrangularis*, Wallich [Nat. Ord. *Ampelidae*], a succulent jointed creeper, suggesting a *Cactus*. At the time of my

visit its snake-like branches were leafless and flowerless. Several days out of our twenty-four were spent in the Sadd.* Here the mass of the vegetation for many miles at a stretch was made up of the dark green *Papyrus* (*Cyperus*) *antiquorum* with its beautiful umbels six feet across, and of “ûm sùf,” or “mother of wool”—*Vossia procera*—a reed-like plant, together with the more familiar *Phragmites communis*. Of smaller plants growing beneath the *Papyrus* at the water's edge a yellow composite and a blue-purple *Convolvulus* or *Ipomaea* were the commonest. The first “Candelabra” *Euphorbia*, striking trees nearly twenty feet high, were seen on the island of Hillet al-Nuwêr [Lat. $8^{\circ} 13'$ N.]. At Bôr [Lat. $6^{\circ} 13'$ N.], my attention was called to the singular *Kigelia aethiopica*, Decr., a tree belonging to the Nat. Ord. *Bignoniaceae*, which has flowerstalks many feet in length from which hang the large rich brown-purple flowers and cucumber-like fruits, the latter a foot long. At Rejâf [Lat. $4^{\circ} 45'$ N.] a yet more tropical-looking plant was the *Adenium coetaneum*, Stapf. [Nat. Ord. *Apocynaceae*], with its absurdly thick stems, fleshy emarginate leaves, and clusters of showy bright-red waxy flowers. Palms were rarely seen. Doubtless this somewhat monotonous vegetation largely explains the restricted Butterfly Fauna.

The practice of burning the rank vegetation of the Sadd, must have a very destructive effect upon insect life. The numerous semi-calcined shells of such Gasteropods as *Burtoa* and *Limicolaria*—genera frequenting trees or bushes—which are seen in many localities, prove that these fires carry their destruction beyond the grassy areas on which antelopes, giraffes and elephants still roam even within sight of the steamer.

The circumstance that nearly every tree and shrub met with is more or less prickly tends greatly to protect butterflies from the collector's net. Near Ad-Duwêm I came across a grass even worse than the Indian “spear-grass,” for its prickly awns at a touch converted the net into a tangled mass, which required some minutes to unravel. Fortunately its distribution appears to be restricted to a very small area.

Shortly, the district to be dealt with includes Khartûm [Lat. $15^{\circ} 37'$ N., Long. $32^{\circ} 31'$ E.] and the country adjacent to the banks of the White Nile to Lake Nô [Lat. $9^{\circ} 30'$ N.];

* The correct spelling : pronounced Sudd.

the Bahr al-Zarâfa throughout its length; also the Bahr al-Gebel up to Gondokoro and Rejâf.

Gondokoro [Lat. $4^{\circ} 54'$ N., Long. $31^{\circ} 41'$ E.], situated on the right or eastern bank of the Bahr al-Gebel, is the most northerly station in Uganda. Rejâf, about eight miles south of Gondokoro, but on the left bank, is in that part of the Anglo-Egyptian Sûdân which, under the name of the Lâdô Enclave, was leased to the late King of the Belgians.

The Bahr al-Gebel in the Sadd region, some forty miles south of Lake Nô, reaches its most westerly point in Long. $30^{\circ} 8'$ E. From these data it will be seen that the region treated of is included within $2\frac{1}{2}^{\circ}$ of longitude, but extends over 11° of latitude—say a strip of 650 miles by 140 miles—though the distance by river is said to be 1,128 miles. Probably most of the butterflies sent to Europe have been taken within a very few miles of the river banks.

Since the place-names given are for the most part those of small native villages, or of “wooding” stations, there is no reason to expect that they will be permanent in a country where even Government posts are from time to time moved for administrative convenience, or more often from the proved unhealthiness of their sites; since, moreover, whether permanent or not, many of these names are not to be found even in the best atlases, it has been thought well to give the approximate latitude of each locality. Of course the latitude is not of much service in the case of places situated on the part of the river running nearly due east from Lake Nô to Kôdôk (Fâshôda).

Entomologically this district is but little known, so, having visited it myself twice, in February 1909 and again in February 1912, it seemed worth while to gather together the stray notes of travellers and sportsmen, to form the basis of a local list. I have been confirmed in this resolve by the discovery that my captures would appear to exceed alike in numbers of species and specimens those of my predecessors. But it must not be forgotten that the district has not been systematically worked, and especially must it be kept in mind that little is known of the wet-season fauna.

Family NYMPHALIDAE.

Sub-family DANAINAE.

1. *Danaida chrysippus*, Linn.

The Sûdân is an interesting region in which to study this very widely distributed species, since all its forms are met with, often all together.

α. The typical, or *chrysippus* form. This varies much in the depth of the ground-colour, moreover a large number of the specimens met with in this part of Africa have the veins of the hind-wings more or less dusted with white scales.

Dunn took it on the Bahr al-Zarâfa.* Loat took four males near Kâkâ, also a number of males and one female at Gondokoro. Dr. Dixey notes that several of Loat's specimens had "a slight white powdering round the gland patch." The Swedes took it both at Khartûm and at Kâkâ.

In 1909 I took a male at Gebel Ên, another at Kosti, and a third on Abba Island. At Khartûm, where the species was common, somewhat more than one-fourth of all the specimens observed were of the *chrysippus* form. In 1912 though I saw a few *D. chrysippus* at Khartûm I did not pay much attention to them, but a typical female was captured at Kanîsa [Lat. 6° 50' N.] and two at Rejâf, my most southerly point. It may accordingly be said to occur throughout the White Nile region.

The wide distribution of *D. chrysippus* throughout Africa and the Oriental region is well known, but attention may be called to the curious fact that Dr. Dixey did not find a single typical example among Peel's twenty-two specimens from Somâliland. Two specimens taken by Bennett in Sokotra have the veins of the hind-wings white. On the other hand, there is no trace of such white on the hind-wings of any of my Egyptian specimens ranging from Cairo to Aswân. The specimens taken by the Rothschild party on the Atbara were typical.

β. Form *alcippus*, Cram., including *alcippoides*, Moore. Under this I include all individuals with more or less white hind-wings.

Taken by Capt. Dunn on the Bahr al-Zarâfa, also by

* So far as I can make out Capt. Dunn's insects must have been taken in about Latitude 9° N.

Loat near Kâkâ and at Gondokoro. The Swedes took it at Khartûm, also near Kâkâ.

In 1909 I met with it commonly at Khartûm, where I estimated that more than half the *chrysippus* were of this form: I also took a male of the extreme *alcippus* form at Ad-Duwêm.

In 1912 I took one at Khartûm, another on the battle-field of Kerreri (about nine miles N.W. of Khartûm), and saw others at both places. I also captured single individuals at Abba Island, Shambî and Gondokoro.

From these records it may be fairly said that the distribution of *alcippus* covers the whole White Nile district.

Rothschild does not record it from the Atbara. Though it is common at Port Sûdân and at Aden, no specimens were found in the Peel collection from Somâliland, nor in the Bennett collection from Sokotra.

γ. Form *dorippus*, Klug [called by some authors *klugii*, Butler]. This lacks the transverse white band across the fore-wing near the tip, but normally has the hind-wings, on the upper surface, of the ground-colour. Aurivillius (3. p. 72) considers this a distinct species, a view in which probably he now stands alone.

Capt. Dunn took it on the Bahr al-Zarâfa. Loat met with it both at Kâkâ and Gondokoro. It was taken by the Swedes at Khartûm. The Rothschild party took it on the Atbara, as well as at Khartûm.

Personally I did not come across this form in 1909, but in 1912 took a single example at Khartûm.

It is a common insect both at Port Sûdân, and at Aden. Chalmley met with it to the north of Suâkin, while Peel found it the dominant form in Somâliland.

δ. Form *albinus*, Lanzknecht [called by some authors *dorippus*, Klug]. This, which may be said to combine in one the two deviations from the type, in that while lacking the white bar on the fore-wings, it has the hind-wings more or less white, would appear to be by far the scarcest form of *chrysippus*. Aurivillius (3. p. 72) regards *albinus* as an aberration of *dorippus*.

Capt. Dunn found it on the Bahr al-Zarâfa. Loat took a specimen near Kâkâ and four at Gondokoro. In 1909 I took a single specimen at Khartûm.

It occurs at Port Sûdân, also at Aden. It seems fair to assume, though the data are imperfect, that *dorippus* and *albinus* occur throughout the White Nile district.

2. *Tirumala petiverana*, Doubleday and Hewitson.

This was taken by Dunn on the Bahr al-Zarâfa, but I did not meet with it myself, and I have no other record from the district.

It is found in Abyssinia and Somâliland, and has a wide range in tropical Africa from East to West.

Sub-family SATYRINAE.

3. *Ypthima asterope*, Klug. The types came from Syria and Arabia.

The sole record that I possess of this butterfly—the only White Nile Satyrine known to me—occurring within the area under consideration, is that of a single example being found upon our steamer near Kanîsa [Lat. 6° 50' N.] on February 17th, 1912.

Selous took a male in 1911 on the Southern Bahr al-Ghazâl. It is not uncommon at Port Sûdân, and Col. Yerbury found it in some numbers at Aden. Dr. Dixey and I took it in Natal and Rhodesia; it is indeed a common and widely distributed African species. The Hope collection contains specimens from British East Africa, Lake Nyassa, Somâliland, and Lagos.

Sub-family NYMPHALINAE.

4. *Pyrameis cardui*, Linn.

This cosmopolitan species was taken by Capt. Dunn on the Bahr al-Zarâfa, also by Loat—a single female at Kâkâ. The Swedes took two males at Ad-Duwêm.

Though in 1909 I found *cardui* common near the point of junction of the Blue and White Niles, and saw it at the same place in 1912, it is remarkable that I have no record of having even *seen* it on either of my voyages up the White Nile. It may reasonably be inferred that it is not very common in that district, at all events during the month of February.

The Rothschild party took one on the Atbara; Yerbury found it commonly at Aden; Peel did not take it in Somâliland, but Bennett found it “common everywhere” in Sokotra. Personally I have found it common enough in Algeria, Cairo, Aswân, Natal and Cape Colony.

5. *Precis cebrene*, Trimen.

Dunn took this species on the Bahr al-Zarâfa, and Loat took two near Kosti [Lat. $13^{\circ} 10' N.$].

In 1912 I distinctly saw this butterfly on a thorny bush at Ad-Duwêm [Lat. $14^{\circ} N.$], also near Kanîsa [Lat. $6^{\circ} 50' N.$].

Cholmley took a few at Ambaia Erba; Yerbury found it common at Aden; Grant in Sokotra, and Peel in Somâliland; it occurs also in Abyssinia.

It is an abundant African species, being found throughout the whole of South Africa and at Lagos on the West Coast.

The closely allied *P. oenone*, Hübner, takes its place in the Oriental region.

6. *Precis clelia*, Cramer.

Taken by Dunn on the Bahr al-Zarâfa and by Loat at Gondokoro.

In 1912 I took single specimens at Hillet al-Nuwêr [Lat. $8^{\circ} 13'$], Gondoroko and Rejâf.

Peel took it in Somâliland; Yerbury took one specimen at Aden, while Bennett reported it as very common in the mountains of Sokotra.

It is found throughout Central and South Africa as well as on the West Coast.

7. *Precis boopis*, Trimen (= *madagascariensis*, Guenée).

This was taken by Dunn on the Bahr al-Zarâfa. In 1912 I took a single example at Mongalla [Lat. $5^{\circ} 12' N.$].

Though ranging over Central and South Africa this species is not so widely distributed as the two preceding.

8. *Hypolimnys misippus*, Linné.

Mr. H. H. King assured me that this interesting and widely-distributed species was not uncommon at Khartûm; it was also in a collection that he had received from the Bahr al-Ghazâl. Dunn took it on the Bahr al-Zarâfa. It is, however, quite certain that I did not see this very conspicuous insect during either of my visits to Khartûm, or the White Nile.

The Rothschild party did not see it, but Cholmley met with it at Ambaia Erba, and Yerbury found it commonly at Aden, noting that: "The females of this butterfly mimic all the forms of *chrysippus*."

At Sallom Junction, on the railway between Port Sûdân and Khartûm, a native boy brought me a male *misippus* in his fingers. Some weeks later I found both sexes fairly common at Port Sûdân, where I took typical females as well as females of the form *inaria*, Cram. (mimicking the *dorippus* form of *chrysippus*). Specimens of both these forms had traces of white on the upper surface of the hind-wings.

It is notable that the Cairo collectors know of but two specimens having occurred in that district during many years; in fact, they look upon it as a great rarity.

This familiar butterfly ranges over all tropical and South Africa as well as India, Ceylon and the Malay Archipelago.

In two females I detected a slight treacly odour.

9. *Hamanumida daedalus*, Fabr.

This characteristic African butterfly is known to occur on the Bahr al-Ghazâl, where it has been taken by Selous and others, and I am practically certain that I saw a specimen on February 15th, 1912, at Mongalla [Lat. 5° 12' N.].

Col. Yerbury took a single example at Aden; it has been reported from Abyssinia and Somâliland. It is found throughout tropical Africa, but stops short of Cape Colony.

10. *Neptis agatha*, Cram.

Loat took two specimens at Gondokoro.

On February 12th, 1912, a short distance below Kîrô [Lat. 5° 22' N.] I had a clear unmistakable view from the steamer of a *Neptis* of the size of *agatha* skimming over the herbage at the water's edge.

This species has been taken at Shoa, in Abyssinia [*circa* Lat. 10° N.]—perhaps the northern limit of the genus in East Africa—and has a wide range in Central, East, West, and South Africa.

11. *Byblia ilithyia*, Drury.

Taken by Dunn on the Bahr al-Zarâfa. Loat took a female near Kâkâ [Lat. 10° 40' N.], where the Swedish expedition also took a female.

In 1912 I took in all five specimens, viz.—a female at Melût [Lat. 10° 27' N.], a male and two females at Tawfî-kîyâ [Lat. 9° 25' N.], and a female at Kanîsa [Lat. 6° 50' N.].

These records point to a northern limit on the White Nile somewhere about 11° N.

Yerbury found this species at Aden and Peel found it in Somâliland.

It occurs also in Abyssinia, East, West and South Africa, as well as in India and Ceylon.

In a male I detected a sweet aromatic scent, compared to that of scented tobacco; a female had a similar scent, but less strong; in another female the scent was compared to chocolate, in a third to that of *Teracolus protomedia*. (Compare Longstaff, 16. pp. 501, 502.)

12. *Byblia goetzius*, Herbst. This species includes *B. acheloia*, Wallengren, *B. castanea*, Butler, and *B. vulgaris*, Staudinger.

Capt. Dunn took it on the Bahr al-Zarâfa. In one or other of the above forms it is found in Aden, Abyssinia, Somâliland, East Africa, Nyassaland, Transvaal, Natal and Cape Colony; but its distribution is especially distinguished by a wider range than that of the preceding species on the West coast and a less wide range on the East.

In Sokotra it is replaced by the nearly allied *B. boydi*, Dixey.

The distribution of the two species has been discussed in great detail by Dr. Dixey (11. pp. 376-379).

13. *Atella phalantha*, Drury.

Capt. Dunn took this on the Bahr al-Zarâfa.

It has been taken in Abyssinia, and, I believe, on the Bahr al-Ghazâl.

The species is widely distributed in Africa south of the Sahara, it occurs in Madagascar and Mauritius, also in India, Burma, Ceylon, Malaya, China and Japan, but it is not in Col. Yerbury's Aden list.

Sub-family ACRAEINAE.

14. *Acraea acerata*, Hewitson, form *vinidia*, Hew.

Taken in abundance by Loat at Gondokoro, January 12th, 1902 [Lat. $4^{\circ} 54' N.$]. A solitary male was taken by the Swedes at Gebel Ên, February 18th, 1901 [Lat. $12^{\circ} 37' N.$].

In 1912 the engineer of our steamer took a male on board near Lâdô, February 13th, 1912 [Lat. $5^{\circ} 5' N.$].

Mr. Eltringham tells me that this species is found through practically the whole of Africa south of the Sahara.

15. *Acraea terpsichore*, Linné, form *rougeti*, Guérin.

I took a single specimen, February 12th, 1912, at Mongalla [Lat. $5^{\circ} 12' N.$].

Mr. Eltringham tells me that this species is even more widely distributed than the last, extending to the Islands.

16. *Acraea natalica*, Boisduval.

Taken by Capt. Dunn on the Bahr al-Zarâfa.

Widely distributed in South and East Africa: the nearest locality to the White Nile given by Mr. Eltringham (13. p. 192) is Kibwezi in British East Africa.

17. *Acraea encedon*, Linné.

Loat took a male at Gondokoro which was intermediate between the typical form and *A. दौर*, Godman and Salvin. The Swedish expedition took a male of the form *दौर* at Renk [Lat. $11^{\circ} 45' N.$], and Selous took three males at the same place, as well as two males at Tawfikîyâ [Lat. $9^{\circ} 25' N.$]; Mr. Trimen says these are all small and pale, and more or less inclining to the form *दौर*.

In 1912 I took a male at Tawfikîyâ which approached the form *infuscata*, Staudinger, and another near Dûlêb Hill [Lat. $9^{\circ} 22' N.$] of the form *lycia*, Wallengren, with much white about it.

Thus it will be seen that this species, in several forms, ranges in the White Nile district over at least 7° of latitude.

Mr. Eltringham (13. p. 210) gives its distribution as from Sierra Leone to the East Coast and from the Cape to Upper Egypt, also to the Islands.

Its larva feeds on *Commelina*.

18. *Acraea abdera*, Hewitson (= *cepheus*, Linné).

Taken by Capt. Dunn on the Bahr al-Zarâfa.

Mr. Eltringham (13. p. 112) gives its range as including the Bahr al-Ghazâl, the Congo basin, Angola, Gold Coast and Gaboon.

Family LYCAENIDAE.

19. *Polyommatus baeticus*, Linné.

Taken by Dunn on the Bahr al-Zarâfa; by Loat near Kâkâ, and at Gondokoro; by Selous near Tawîla, and by the Swedish expedition at Khartûm, Ad-Duwêm, and Mohadan Zarâfa.

I found it in abundance at Khartûm in 1909, and also met with it at Ad-Duwêm. In 1912 I found it again at the last-named place, and also at Rejâf.

This, probably the most widely-distributed of all the "Blues," may be said to occur throughout our district, but it would not appear to be plentiful except at Khartûm. Rothschild speaks of it as "common in Egypt from Cairo to Khartûm." He also took it at Al-Nakhîla, on the Atbara River. I have myself taken a few specimens near Cairo and have seen it in some numbers at Aswân.

It is common at Aden and it has been recorded from Abyssinia and Somâliland, and has a wide range in South Africa, as well as in Europe, Asia and Australia.

20. *Lachnocnema bibulus*, Fabricius.

The Swedes took two very dwarfed males on Abba Island [Lat. 13° 22' N.].

This species has a wide distribution in South, Central, East, and West Africa, but I have no other record for the White Nile.

21. *Tarucus theophrastus*, Fabricius.

Loat met with this common and widely-distributed insect at Kâkâ, Mongalla and Gondokoro. The Swedes took it at Khartûm, Abba Island, Renk and Kâkâ.

In 1909, besides seeing it in abundance at Khartûm, I took it at Sôba (on the Blue Nile), at Ad-Duwêm and at Tawîla. In 1912 it was again abundant near Khartûm as well as near Sôba station, and on the battlefield of Kerreri. Up the White Nile it occurred at Ad-Duwêm (commonly), Dûlêb, Shambî (several), Tombê, Kîrô, Mongalla, Gondokoro and Rejâf, as well as on the Bahr al-Zarâfa.

Mr. Rothschild took it commonly at Al-Nakhîla and at Shendî, but found it rare at Khartûm. In 1909 I took one at Wâd Ben Nâga station, about twenty miles south of Shendî, as well as at Aswân and Luxor.

Shortly, it may be said that the range of this butterfly in North East Africa extends from Luxor to Gondokoro.

It is common at Aden, and Bennett took a specimen in Sokotra. Thrupp took it in Somâliland. It also occurs in Senegal.

According to Bingham (4. vol. ii, p. 419) it occurs in Persia and Balûchistân as well as throughout India and in Ceylon. This and the next species reach Europe.

22. *Tarucus telicanus*, Lang (= *plinius*, Fabr. = *pulcher*, Murray).

Loat took a male near Kâkâ [Lat. $10^{\circ} 40' N.$]. In 1912 I took a male at Hillet al-Nuwêr [Lat. $8^{\circ} 13' N.$] and in the same year took two specimens at Port Sûdân.

In 1909 I took one at Aswân, two at Luxor, and another as far north as Tel al-Amarna [Lat. $27^{\circ} 37' N.$]; but though ranging in the Nile Valley from that latitude down to $8^{\circ} 13' N.$, it would not appear to be common at any of the places named.

Though the species is well known in Central and South Africa as well as at Aden, and is found in Northern India, I have no record from Somâliland or Sokotra.

23. *Castalius usemia*, Neave.

Mr. Neave's types of this neatly marked little butterfly were taken in the Victoria Nyanza district.

I was fortunate in securing a single example at the Rejâf wooding station [Lat. $4^{\circ} 50' N.$].

24. *Cupido cretosus*, Butler.

A female was brought home by the Swedish expedition from Renk [Lat. $11^{\circ} 45' N.$]; concerning this Aurivillius remarks: "This rare species was hitherto only recorded from Senegal and from Abyssinia." The variety *C. lactinatus*, Butler, has been met with in Somâliland.

25. *Catochrysops eleusis*, Demaison.

This little-known but very distinct "Blue" was taken by the Rothschild party at Aswân, Wâdi Halfa, and at Nakhîla on the Atbara. I have myself met with it at Aswân, Abû Simbel, and Khartûm, but not south of the latter place. The Swedish expedition also found it at Khartûm. Its range in latitude would therefore appear

to be from 24° — $15\frac{1}{2}^{\circ}$ N. It is usually common where it occurs, and at Aswân it appeared to be attached to the pink-flowered *Lotus arabicus*, Linn.

26. *Catochrysops malathana*, Boisduval, var. *nilotica*, Aurivillius.

Two males were taken by the Swedes to the South of Kâkâ [Lat. $10^{\circ} 40'$ N.].

I have no other record in the Sûdân of this common Central and South African butterfly, which has also been reported from Lagos and Madagascar, as well as from Lahej in Southern Arabia.

27. *Zizera lysimon*, Hübner. This includes *Z. karsandra*, Moore, and, according to De Nicéville, also *Z. knysna*, Trimen.

In 1909 I took this fairly commonly at Khartûm, also a single example at Kosti [Lat. $13^{\circ} 10'$ N.] and another at Luxor.

In 1912 I took two on Abba Island, one at Kôdôk, also one at Tawfikîyâ [Lat. $9^{\circ} 25'$ N.], as well as one at Port Sûdân.

Rothschild took one at Nakhîla (f. *karsandra*); Bennett found it plentiful in Sokotra, and Yerbury took it at Aden (f. *knysna*).

This species is common in Central and South Africa, but I have no record of it on the White Nile south of $9^{\circ} 25'$ N.

According to Bingham (4. vol. ii, p. 358) it extends northwards to Southern Europe, Central and Western Asia; eastwards to India and Ceylon; southwards to Malaya and Australia.

28. *Chilades trochilus*, Freyer.

Loat took three at Kâkâ [Lat. $10^{\circ} 40'$ N.].

In 1909 I took one at Aswân, and another at Khartûm. In 1912 I took three at Port Sûdân. Cholmley took it north of Suâkin; Yerbury at Aden; also Peel in Somâliland.

It occurs also in the Victoria Nyanza district, British East Africa, Portuguese East Africa, Rhodesia, and also at Lagos. To these Bingham (4. vol. ii, p. 368) adds South Eastern Europe, Central Asia, India, Ceylon, Burma, Malaya, and Australia.

29. *Lycaenesthes amarah*, Guérin.

Taken by Capt. Dunn on the Bahr al-Zarâfa, and by Loat at Mongalla [Lat. $5^{\circ} 12' N.$].

In 1912 I took a male at Lûl [Lat. $9^{\circ} 47' N.$], also one of each sex at Kanîsa [Lat. $6^{\circ} 50' N.$] and a male at Gondokoro.

Its northern limit on the White Nile would appear, so far at least as the above records go, to be about $10^{\circ} N.$

Cholmley met with it north of Suâkin, and Yerbury at Aden, where it is common. It also occurs in Somâliland, in Central and East Africa and southwards down to Rhodesia and Natal.

30. *Lycaenesthes otacilia*, Trimen.

I took a male on January 8th, 1912, near Sôba station, on the Blue Nile, about ten miles above Khartûm, but have no other records for this part of Africa.

It is met with in Somâliland, British East Africa, Rhodesia, Natal and Cape Colony.

31. *Azanus jesous*, Guérin.

Bingham (4. vol. ii, p. 363) considers this as the same species as *gamra*, Lederer, and *crameri*, Moore: De Nicéville considers the two latter as synonyms of *sigillata*, Butler. Loat took a male at Mongalla [Lat. $5^{\circ} 12' N.$], but I have not myself met with this butterfly nearer to the White Nile than Port Sûdân. Mr. Peel took several in Somâliland. It occurs in the Victoria Nyanza district, in British East Africa, British Central Africa, Rhodesia and Natal. Bingham (4. vol. ii, p. 364) adds Arabia, (Yerbury gives *sigillata*), Balûchistân, a great part of India, Burma and Ceylon.

32. *Azanus ubaldus*, Cramer (*A. zena*, Moore; *A. thebana* Staudinger).

The Swedish expedition took it at Khartûm and on Abba Island [Lat. $13^{\circ} 22' N.$].

In 1909 I found it fairly common at Khartûm, and also took single specimens at Ad-Duwêm and Hillet Abbâs [Lat. $13^{\circ} 7' N.$] as well as at Amâda, in Nubia [Lat. $22^{\circ} 45' N.$].

In 1912 I again took it at Khartûm and Ad-Duwêm,

also at Melût [Lat. $10^{\circ} 27' N.$], Dûlêb [Lat. $9^{\circ} 22' N.$], Shambî [Lat. $7^{\circ} 0' N.$] and Mongalla [Lat. $5^{\circ} 12' N.$].

Mr. N. C. Rothschild took it near Shendî [Lat. $16^{\circ} 42' N.$] as well as at Nakhîla [Lat. $17^{\circ} 25' N.$], but did not find it common at either place.

Thus it would appear to range along the Nile Valley from the Tropic of Cancer, almost to Uganda.

Yerbury found it (*zena*) to be "generally distributed" at Aden; Peel took it (*thebana*) in Sokotra, while Col. Manders met with it at Suâkin (*zena*). It has also been taken in Somâliland and Natal.

Bingham (4. vol. ii, p. 363) gives Balûchistân, India, Ceylon and Burma.

33. *Deudorix livia*, Klug.

The type was taken "inter Kineh et Assuan Novembre," i. e. *circa* Lat. $25^{\circ} N.$

The Swedes took two females on Abba Island [Lat. $13^{\circ} 22' N.$].

Personally I know it as a native of Port Sûdân only. Prof. Poulton took a specimen near the Great Pyramid.

Col. Yerbury used to take it at Aden and remarks on the similarity of the female to that of the next species. Aurivilius gives Somâliland as a locality, also Nubia and British East Africa.

34. *Virachola antalus*, Hopffer.

I took three at Tawîla in 1909 [Lat. $13^{\circ} 10' N.$], and one at Port Sûdân in 1912.

It is found practically throughout tropical and South Africa as well as in Madagascar.

35. *Hypolycaena philippus*, Fabricius.

On February 22nd, 1912, I took one specimen at Tawîla [Lat. $13^{\circ} 16' N.$], but have no other White Nile records for this butterfly.

It occurs in Somâliland, in Uganda, and has a wide distribution in tropical Africa, occurring also in Natal.

Family PAPILIONIDAE.

Sub-family PIERINAE.

36. *Herpaenia eriphia*, Godart (= *melanarge*, Butler),
f. *lacteipennis*, Butler; the extreme dry-season form
is termed by Aurivillius *straminea*.

Found by Dunn on the Bahr al-Zarâfa. A very small example ($1''\ 3\frac{1}{2}''' = \text{say } 33\text{ mm.}$) of the extreme "dry" form was taken by Selous at Tawîla [Lat. $13^{\circ}\ 16'$ N.]. The Swedes took two males of the form *straminea* at Gebel Ên and Kâkâ respectively: the alar expanse of these was 31 mm. and 38 mm.

I took a very small example of each sex at Tawîla in 1909. In 1912 I took another at the same place, as well as three on Masran Island [Lat. $12^{\circ}\ 45'$ N.] and three more at Renk [Lat. $11^{\circ}\ 45'$ N.]: these were all small.

Klug's specimens of *Pontia tritogenia*, which is not distinguishable from *eriphia*, were taken at Ambukôl in July and August. There is a specimen in the Coll. Hope labelled "Nubia."

On the White Nile, however, the above records indicate a distribution limited by the latitudes $13^{\circ}\ 16'$ and $10^{\circ}\ 40'$ N.

This insect is found all along the eastern side of Africa, in Madagascar, throughout South Africa, and it has been recorded from Senegal.

Yerbury records *H. iterata*, Butler, for Aden: Aurivillius (3. p. 31) seems to doubt whether it is specifically distinct. This form is also recorded for Somâliland, as well as for German East Africa, and British East Africa.

37. *Belenois gidica*, Godart, including f. *abyssinica*, Lucas (Northern form), and f. *westwoodi*, Wallengren.

Capt. Dunn took the form *abyssinica* on the Bahr al-Zarâfa, and Loat took several of the same form near Kâkâ, as well as two at Gondokoro. The Swedes took a male of f. *westwoodi* at Gebel Ên [Lat. $12^{\circ}\ 37'$ N.], and two males of the form *abyssinica* at Renk.

In 1912 I found it common at Gebel Ahmed Agha [Lat. $11^{\circ}\ 0'$ N.], and took a few specimens at Kâkâ, Kanîsa, Mongalla, Lâdô, Gondokoro, and Rejâf.

It will be seen that I have no record of this common

South African "White," north of Lat. $12^{\circ} 37' \text{ N.}$, *i. e.* three degrees above Khartûm.

This species is found in Abyssinia and throughout South and East Africa, and in one or two districts in West Africa.

A female had a faint scent. (Compare Longstaff, 16. p. 512.)

38. *Belenois severina*, Cramer.

Both Aurivillius and Dixey regard *leucogyne*, Butler, and *boguensis*, Felder, as races of *severina*, and transitional forms are common.

Dunn found typical specimens as well as *boguensis* on the Bahr al-Zarâfa. Loat took both forms at Mongalla [Lat. $5^{\circ} 12' \text{ N.}$] and the typical form at Gondokoro.

In 1912 I met with the typical form at Gebel Ahmed Agha [Lat. $11^{\circ} 0' \text{ N.}$], Dûlêb, Hillet al-Nuwêr, Shambî, Kanîsa, Tombê [Lat. $5^{\circ} 43' \text{ N.}$], and Rejâf. The same year I took the form *boguensis* at Melût [Lat. $10^{\circ} 27'$], Dûlêb, Shambî and Kanîsa [Lat. $6^{\circ} 50' \text{ N.}$].

These records give a very similar distribution for typical *severina* and for the f. *boguensis*; moreover the latter is common in the Victoria Nyanza country, and Selous took it on the Bahr al-Ghazâl.

B. severina is the "Common White" of South Africa, covering the whole continent south of the Sahara, passing over into Madagascar, while Col. Yerbury records it from Aden (under the name of *leucogyne*), but it does not enter the Oriental province.

39. *Belenois mesentina*, Cramer (= *lordaca*, Walker).

Taken by Dunn on the Bahr al-Zarâfa. It was found commonly by Loat at Kâkâ [Lat. $10^{\circ} 40' \text{ N.}$], Mongalla [Lat. $5^{\circ} 12' \text{ N.}$] and Gondokoro. The Swedes took it at Mohadan Zarâfa, and at Kâkâ; the specimens, more especially the males, being very small.

In 1909 I found it in abundance at Khartûm, and took three at Sôba. It was common at Ad-Duwêm and I took a solitary male at Tawîla. In 1912 I took several in the Khartûm district, including Kaderû and Kerreri. On the White Nile it occurred at Tawîla, Renk, Meshra Zarâfa, Kâkâ (common), Melût (common), Lûl, Tawfikîyâ, Dûlêb (common, but all the specimens taken were remarkably small), lower Bahr al-Zarâfa (common), Shambî, Kanîsa,

Bôr, Malêk, Tombê, Kîrô, Mongalla (females abundant, males scarce), Lâdô, Gondokoro and Rejâf—in fact, throughout the district.

Rothschild took several on the Atbara; it is common at Port Sûdân and at Aden [under the name of *lordaca*]. It also occurs in Somâliland. *B. mesentina* has by far the widest distribution of the genus, extending as it does over the greater part of Africa, Madagascar, Persia, Afghanistan, India and Ceylon.

Yerbury notes its attachment to a species of *Capparis* on which the larva feeds.

I found the males to have a slight scent, variously suggesting the adjectives “musky,” “aromatic,” “flowery.”

40. *Pinacopteryx venata*, Butler.

[Plate II, figs. 1 ♂, 2 ♀, 3 u. s.]

The type of this little-known butterfly, a female, was captured by Petherick somewhere on the White Nile.* Another female was taken by Capt. H. W. Dunn on the Bahr al-Zarâfa in 1900.

On March 8th, 1902, Mr. Loat took a male at Gondokoro, which was described by Dixey (12. p. 141).

Meanwhile the authorities at the British Museum had identified this species with *P. doxo*, Godart, but Messrs. Trimen and Dixey, who have both carefully examined Godart's type at Edinburgh, are satisfied that this identification is wrong. Godart's insect appears to come nearest to *P. simana*, Hopffer.†

In February 1912 I was fortunate enough to capture twelve specimens of this distinct, though not very attractive “White,” viz. a male and three females at Shambî [Lat. 7° 0' N.], a male and two females at Malêk [Lat. 6° 7' N.], and three males and two females at Gondokoro [Lat. 4° 54' N.].

Mr. Loat's specimens and my own were all found between Lat. 7° 0' N. and Lat. 4° 54' N., but Capt. Dunn's specimen must have come from further North, probably 8° 30' N., or even 9° N., and the precise locality of Petherick's specimen is also unknown.

* “Descriptions of a New Genus and six New Species of Pierinae,” by A. G. Butler, F.L.S., etc. (There called *Ixias venatus*.) Trans. Ent. Soc. Lond., 1871, p. 169, Plate VII, fig. 7.

† Dixey, Proc. Ent. Soc. London (1912), pp. xlii, cxiii.

[Synchloë glauconome, Klug.]

The type is said to have come from "Arabia deserta, in Monte Sinai ad *Erigeron denticulatum*."

Rothschild took it at Aswân and at Shendî [Lat. 16° 42' N.]. Cholmley found it north of Suâkin. Col. Yerbury reported it as common and generally distributed in the Aden district, the larva feeding upon *Cleome paradoxa* [Nat. Ord. *Capparidaceae*].

I have taken it near Cairo, and found it commonly at Port Sûdân, but have no record for Khartûm, or the White Nile.

Bingham states that it occurs in Persia, Balûchistân, the Pamirs and the Panjâb. The Hon. Walter Rothschild tells me that it occurs on the Sahara.

Aurivillius (1. p. 414) gives *Somâniland* on the authority of Miss E. M. Sharpe (20. p. 528). In the same work (p. 497) he indicates this as one of three Ethiopian species (the other two being *Acraea doubledayi*, Guér., and *Teracolus chrysonome*, Klug) which extend northward into the Palaearctic province. However, I should regard *glauconome* as a Palaearctic species which just enters the north of the Ethiopian province.

Three males yielded a distinct sweet scent like that of *Freesia*.]

41. *Calopieris eulimene, Klug.*

The types (both sexes) of this beautiful local and singular butterfly came from Ambukôl, a place in the Dongôla district, situated on the Nile just below Korti in Lat. 18° 4' N.

In 1909 I took a single specimen, a male, at Burri, the eastern suburb of Khartûm, also seven other males at Sôba on the Blue Nile about twelve miles above Khartûm. In 1912 I took a female a little to the north of Sôba station on the east bank of the Blue Nile, and, a week later, took three males and two females between that spot and Khartûm. These were for the most part in poor condition.

Mr. N. C. Rothschild took a single specimen at Shendî. Mr. A. J. Cholmley took five in 1896 at Ambaia Erba, north of Suâkin.

Mrs. Waterfield took several at Port Sûdân during the latter part of 1911 and the beginning of 1912, and I myself during the last days of February and first days of March

secured no less than eighteen males and nine females. My Port Sûdân specimens may be distinguished from those taken near Khartûm by the greater development of the black markings, and more especially by the orange veins on the undersides of the hind-wings being edged with black. I associate this greater strength of coloration [not present in Klug's types] with spring rains reported by Mrs. Waterfield as having fallen at Port Sûdân, but which did not occur at Khartûm.

The above are all the records that I have come across. Boisduval [Sp. Gén. der Lepid., vol. i, sp. 581] only quotes Klug.

I have little doubt that this butterfly is attached to the Desert Caper, *Capparis aphylla*, Roth., a leafless bush with bluish-green stems and inconspicuous flowers with red stamens.

Three males appeared to have a faint sweet scent, suggesting in one case Gorse.

42. *Teracolus calais*, Cramer (= *dynamene*, Klug, = *carnifer*, Butler).

Klug's types came from Ambukôl, and from "Arabia deserta."

Dunn took it on the Bahr al-Zarâfa.

In 1909 I took two at Tawîla, and in 1912 I captured in all twelve specimens at various points on the White Nile from Tawîla in Lat. 13° 16' N., up to Kanîsa in Lat. 6° 50' N., half my specimens coming from the latter place.

Col. Yerbury found it one of the commonest butterflies at Aden, where its larva feeds on the *Salvadora persica*, Linn. [Nat. Ord. *Salvadoraceae*].

It has a wide range in Africa—Abyssinia, Somâliland, Victoria Nyanza district, British East Africa, German East Africa, the Congo, Damaraland, Angola; in Asia it is found in Arabia, Persia, Sind and North-west India; but in Southern India it gives place to *T. amatus*, Fabricius.

43. *Teracolus phisadia*, Godart (= *arne*, Klug).

Klug recorded this from Ambukôl as well as from "Arabia deserta."

Capt. Dunn took it on the Bahr al-Zarâfa. Loat took five males and two females near Kâkâ. Selous took two males at Tawîla. The Swedes took four males and a

female on Abba Island [Lat. $13^{\circ} 22'$ N.] and at Renk [Lat. $11^{\circ} 45'$ N.].

In 1909 I took six males and six females at Tawîla [Lat. $13^{\circ} 16'$ N.]. In 1912 I took in all fifteen males and sixteen females, the distribution of which was remarkable. A solitary female occurred at "the Mahdi's place" on Abba Island [Lat. $13^{\circ} 22'$ N.]. Thirteen specimens were brought home from Tawîla, some half-a-dozen miles to the south of the last-named locality, where it was as common as on the occasion of my first visit. Fifteen were taken on Masran Island [Lat. $12^{\circ} 45'$ N.] and a solitary male at Mashra Zarâfa [Lat. $10^{\circ} 50'$ N.].

I have not been able to determine the precise latitude of Capt. Dunn's locality, but it must have been somewhere between $9^{\circ} 30'$ and $7^{\circ} 0'$ N., or considerably south of my localities, which all lie between $13^{\circ} 22'$ N. and $10^{\circ} 50'$ N., the great majority of the specimens occurring a little to the north or south of the 13th parallel.

Cholmley saw but one example, at Wâdi Gabait. Nurse and Yerbury found it abundant and variable at Aden; its larva feeding on *Salvadora persica*, Linn. It is also recorded from the Lebanon, Somâliland, Abyssinia, British East Africa and Senegal.

My impression is that of a very local butterfly, abundant where it occurs, somewhat sluggish in habit and easily caught.

44. *Teracolus castalis*, Staudinger.

The only record on the White Nile that I know of is my capture of two males at Kanîsa [Lat. $6^{\circ} 50'$ N.] on February 17th, 1912.

It occurs in British East Africa, both in the Victoria Nyanza Country and at Mombâsa, also in Somâliland.

45. *Teracolus chrysonome*, Klug.

The type came from Ambukôl. *T. helvolus*, Butler, is the dry-season form.

Rothschild found it common at Gebel Margel, near Shendî. I took a female near Mogran (on the Western, or White Nile, side of Khartûm) on February 8th, 1909. Cholmley found it very common in January and February about Halaib on the Red Sea. Peel took it in Somâliland (f. *helvolus*, Butl.).

Mrs. Waterfield and I found it in numbers, though local, in the scrub on the landward side of Port Sûdân, males preponderating largely. It did not turn up in the Park.

I have not come across any records from the White Nile district south of Khartûm, but it has a wide range further south, being found in Uganda, British East Africa, German East Africa, Portuguese East Africa, Congo, Rhodesia and Angola. Aurivillius (3. p. 51) adds Arabia and Northern Nigeria.

The sexes are distinct enough, but it is not so strikingly dimorphic as most species of the genus, nor does it seem to be variable.

46. *Teracolus vesta*, Reiche.

The type came from Abyssinia.

I took a solitary specimen at Rejâf [Lat. $4^{\circ} 45' N.$], on February 14th, 1912, and have no other records from this part of Africa although its range includes Mombâsa, Natal, Mashonaland, the Transvaal, Delagoa Bay, Damaraland and Angola.

47. *Teracolus amelia*, Lucas.

The type came from British East Africa.

Aurivillius (3. p. 52) says that this species, which extends from Senegal to Nubia, is very likely a local race of the preceding, but Dixey considers them quite distinct.

Loat took a solitary female, of the dry-season form, near Kâkâ; the Swedish expedition took another specimen, also a female, at the same place [Lat. $10^{\circ} 40' N.$].

I did not come across this species and have no other records from that part of the world, but there is a specimen in the Hope collection from Abyssinia (River Atbara).

48. *Teracolus protomedia*, Klug.

Klug says: "ex Arabia felici, Ambukohl: mensibus Julio et Augusto."

Petherick took both sexes on the White Nile. Dunn took it on the Bahr al-Zarâfa. Loat took five females near Kâkâ. Selous took two of each sex near Tawfikîyâ, one of the males being very small. The Swedish expedition took six males and three females all to the south of Kâkâ, the specimens being all of normal size and coloration.

In 1909 I took a solitary female at Khartûm, and subsequently ten males and one female at Ad-Duwêm, also one

of each sex at Tawîla. In 1912 it was quite common in gardens at Khartûm and I saw several at Kadarû, ten miles to the north. Moreover I either took, or saw, it at almost every stopping-place on the White Nile, right up to Rejâf.

The Rothschild party took eight at Nakhîla. Cholmley took it commonly north of Suâkin. I saw several at Port Sûdân, while Yerbury found it at Aden. Peel took a male at Sibî, West Somâliland, in 1895. It occurs also in Uganda, at Mombâsa, in German East Africa, and at Yola in Nigeria. It is thus evident that this large handsome swiftly-flying butterfly has a wide distribution.

Butler remarks that specimens of this species almost invariably arrive in a more or less broken condition. It has a strong flight and is, I should imagine, long lived.

The sexes are not remarkably different in appearance, and the insect does not appear to vary otherwise than in size.

In six males I have detected a slight scent, not easy to describe. The words "dusty," "stuffy," "musky," "peculiar," "like wood," and "very faint Freesia" have been applied to it. (Compare 16. p. 510.)

49. *Teracolus halimede*, Klug.

This includes Klug's *acaste*, from Ambukôl. Butler's *leo* is a form or race of this species, but no marked line can be drawn between it and the type; *coelestis*, Swinhoe, is not specifically distinct.

Klug's types came from Ambukôl, as well as from "Arabia felix and Arabia deserta." Consul Petherick sent it home from the White Nile. Loat took a male and two females near Kâkâ. Selous found it common at Tawîla and took a female opposite Renk; all his specimens would appear to have been of the form *leo*. The Swedes took one of each sex on Abba Island; these were assigned by Aurivillius to var. *acaste*, Klug.

In 1909 I took a number from Ad-Duwêm [Lat. 14° 0' N.] to Gebel Ên [Lat. 12° 37' N.].

In 1912 I took in all twenty-two (many of the form *leo*) on the White Nile, namely: on Abba Island five, at Tawîla nine, on Masran Island five, at Gebel Ên two, and at Kâkâ one [Lat. 10° 40' N.].

So far as my information goes its limits on the White Nile are Lat. 14° 0' N. and Lat. 10° 40' N., with headquarters at Tawîla [Lat. 13° 16' N.]. It is an insect not easily overlooked.

Cholmley took two of the form *leo* north of Suâkin, and Yerbury took it at Aden [given under the names *acaste*, Klug, and *coelestis*, Swinhoe]. The food-plant of the larva is *Cadaba glandulosa*.

It is a common butterfly at Port Sûdân and not as local as the next species. I found many females extremely worn, suggesting prolonged life.

This variable insect ranges over Abyssinia, Somâliland, British East Africa and German East Africa.

A male had a distinct musky odour. (Compare 16. p. 510.)

50. *Teracolus pleione*, Klug (= *miriam*, Felder).

The type came: "ex Arabia felici."

Petherick took it somewhere on the White Nile, and Loat took a female near Kâkâ [Lat. 10° 40' N.].

On February 5th, 1912, I captured two females at Kâkâ, both of the form with an orange flush, approaching the male colouring. I know of no other specimens from the White Nile.

At Port Sûdân this butterfly is extremely local; in certain spots in the Park it is very abundant, I took also a few specimens to the north of the harbour. The males had little or no orange flush.

Col. Yerbury took it in abundance at Aden, where he and Col. Nurse noted that it attached itself closely to a certain shrub, *Cadaba glandulosa* [Nat. Ord. *Capparidaceae*], on which the larva feeds. I can confirm this, though I did not identify the shrub. Late in the afternoon I have beaten the butterflies out of these shrubs in such numbers that on several occasions I have had five or six in my net at once.

Col. Yerbury tells me that most of his specimens were of a darker yellow than mine, also that in the Aden district about one out of every four females has the yellow flush.

This butterfly has also been found in Abyssinia.

A male had a scent like Freesia.

51. *Teracolus eris*, Klug.

The type came from Ambukôl.

The only northern record that I have of this widely-spread species is the capture of a solitary male at Masrân Island [Lat. 12° 45'] in 1912. I think, however, that Mrs. Waterfield has taken it at Port Sûdân.

Dr. Dixey and I took a few specimens in South Africa, at Ladysmith and the Victoria Falls, but it is a very rapid flyer, so that a small proportion only of those seen is actually secured.

Its area of distribution includes Abyssinia, Somâliland, the Victoria Nyanza, German East Africa, Rhodesia, Matabeleland, Natal and Angola.

52. *Teracolus hetaera*, Gerstaecker.

Mr. Loat took a female of this species near Kâkâ [Lat. $10^{\circ} 40' N.$], which was at first thought by Dr. Dixey (13. p. 146) to be a yellow form of the female of *T. phlegyas*. I have no other record for the White Nile.

Its range extends from the Victoria Nyanza to Mombâsa.

53. *Teracolus phlegyas*, Butler.

The synonymy of this species is puzzling. Butler called its dry-season form *jalone*, and the male of the same *coliagenes*. Again *T. imperator*, Butler, is indistinguishable from *phlegyas*. According to Trimen *phlegyas* is *ione*, Godart, in spite of the fact that Godart's description of *ione* agrees closely with the Natal insect. Trimen lays stress on the fact that Natal was not known to white men in Godart's day. [He died in 1823.] Dixey, however, considers the Natal insect to be *speciosus*, Wallengren [= *erone*, Angas], of which the dry-season form is *jobina*, Butler, the wet-season form *ione*, Godart.

The female is very variable and extremely different from the male. The types were taken by Petherick on the White Nile. Capt. Dunn met with it on the Bahr al-Zarâfa. Loat took a typical male near Kâkâ [Lat. $10^{\circ} 40' N.$]. Selous took two females and a male at Tawfikîyâ [Lat. $9^{\circ} 25' N.$]. The Swedes took a male on Abba Island [Lat. $13^{\circ} 22' N.$], also a female near Kâkâ.

In 1912 I took in all ten specimens, viz. two males at Kîrô [Lat. $5^{\circ} 22' N.$], two males at Mongalla [Lat. $5^{\circ} 12' N.$], two males and a female at Gondokoro, and three males at Rejâf wooding station.

Thus *T. phlegyas*, while it ranges over $8\frac{1}{2}^{\circ}$ of latitude along the White Nile, would appear to be commonest high up the river, above the Sadd.

Outside our limits this lovely butterfly is met with in Abyssinia, British East Africa, German East Africa, Rhodesia, Matabeleland, Natal, Damaraland and Senegal.

This species, and the remark is even more true of *T. eupompe*, is easily taken late in the afternoon when disturbed from the coarse grass in which the butterflies sleep; otherwise I quite agree with Messrs. Marshall* and Loat (13. p. 146) as to the wildness of their flight. It is remarkable that the purple-tip is rarely caught sight of during flight, and even the crimson-tip of *eupompe* is not nearly so conspicuous as might be supposed, but both butterflies have a peculiar bluish-white look when on the wing.

54. *Teracolus eupompe*, Klug.

This species is both sexually dimorphic and variable, and has consequently been split up by authors into, *e. g. pseudacaste*, Butler; *theopompe*, Felder, and *dedecora*, Felder. It would appear also to be conspecific with *miles*, Butler (26. p. 10).

Klug says: "Habitat in Arabia deserta, in Sinai monte, in Dongola et Habessinia." Capt. Dunn took it on the Bahr al-Zarâfa. Petherick took it on the White Nile. Loat took both sexes at Kâkâ and near Mongalla, as well as at Gondokoro. Selous took a male at Tawîla, and both sexes at Tawfikîyâ. The Swedish expedition took nine males and one female at Renk, Gebel Ên, and Kâkâ; these included the forms *theopompe*, Feld., and *dedecora*, Feld.

In 1909 I took two females at Gebel Ên; seven males and a female at Tawîla, and an aberrant female at "the Mahdi's place" on Abba Island.

In 1912 I met with it in considerable numbers, finding it at nearly every landing-place from Ad-Duwêm to Rejâf. It was very common at Gebel Ahmed Agha, Kanîsa and Mongalla, but might be described as abundant at Rejâf.

This species varies greatly in size. In a very few examples there is a purple glance or sheen on the crimson-tip. Many of the females were much worn. The great beauty of the males so fascinated me that I could not resist taking a considerable number, hence my collection gives the wrong impression that this species was commoner on the White Nile than, say, *T. evarne*, which is less attractive.

The Rothschild party took it commonly (*pseudacaste*) at Al-Nakhîla in 1904, but I have no record from Khar-tûm. Mr. Cholmley took it commonly north of Suâkin, and Peel found it in Somâliland. It is common enough at Port Sûdân; Col. Yerbury took two specimens at Aden

* Trans. Ent. Soc. Lond., 1902, pp. 354, 371.

(miles). It is found in Abyssinia, Somâliland (the commonest butterfly at Zaila), the Victorian Nyanza district, British East Africa, German East Africa and in Senegal.

In two males I detected a slight scent, in one described as "sweet," in the other as "stuffy."

55. *Teracolus achine*, Cramer.

This fine species is variable and accordingly has received several names. *T. simplex*, Sharpe, was described from a dry-season male from Durban; *antevippe*, Boisduval, and *helle*, Butler, are names given by the latter author to Petherick's specimens (both sexes) from the White Nile. Selous, in 1911, took two males of the extreme dry-season form at Tawfikîyâ [Lat. 9° 25' N.].

In 1912 I secured four males and two females on the White Nile, viz. single specimens at Dûlêb (not far from Tawfikîyâ), Hillet al-Nuwêr, Kanîsa and Kîrô, and a pair at Rejâf. From these occurrences it may be gathered that on the White Nile *T. achine* is confined to localities south of Lat. 9° 30' N., and that it is not very common anywhere.

Cholmley took a dry-season male (*simplex*, Sharpe) north of Suâkin. Peel took a wet-season female in Somâliland. I took six males and four females at Port Sûdân.

It occurs in Rhodesia, Natal, and Cape Colony, and indeed probably over the whole of Africa south of the Sahara, if with Dr. Dixey we reckon the West African *T. carteri*, Butler, as a sub-species.

56. *Teracolus evippe*, Linné.

The form of this variable species usually met with on the White Nile is *epigone*, Felder, which is the same as *microcale*, Butler.

Petherick took a male somewhere on the White Nile. Loat took a male and six females at Mongalla.

I did not meet with this species in 1909, but in 1912 took twelve males and two females in localities ranging from Abba Island [Lat. 13° 22' N.] to Gondokoro. It was not common anywhere, but three out of my fourteen specimens were captured on the small patch of firm ground in the Sadd known as Hillet al-Nuwêr [Lat. 8° 13' N.].

Col. Yerbury met with it at Aden [*epigone*], but so far as I know it does not occur at Port Sûdân.

It occurs in the Victoria Nyanza district, Natal, Cape Colony, Sierra Leone, Lagos, South Nigeria, the Gambia district, the Cameroons and Angola.

The White Nile specimens are very small and many of them have the orange-tip paler than in specimens taken further south.

A male yielded a scent like *Freesia*.

[*Teracolus omphale*, Godart.

The Swedish expedition sent home two *Teracoli*, a male and a female, one taken at Renk, the other at Kâkâ, in February. Aurivillius calls them *T. theogone*, Boisduval, the winter form of *omphale*. He adds that both the specimens are small, the male measuring 33 mm. in expanse, the female only 28 mm.

I have not come across any other record of this species being taken on the White Nile, and did not myself meet with it anywhere in the Sûdân.

Odd specimens of the genus *Teracolus* are difficult to determine, and it seems reasonable to conjecture that the butterflies taken by the Swedes were not *omphale*, but perhaps the *epigone* form of *evippe*, or some other admittedly White Nile species, such as *achine*, or *evagore*.

Omphale occurs in Somâliland, though Peel did not come across it there; the two butterflies which Dr. Dixey (11. p. 15) so named, turn out, as he informs me, to be respectively an "intermediate" male of *T. evagore*, Klug, and a wet-season female of *T. achine*, Cramer.

It has also been taken in Abyssinia and almost all over Africa south of the Equator. The Hope collection contains two specimens from the Gambia.

In the absence of confirmatory evidence I exclude *T. omphale* from the White Nile list.]

57. *Teracolus दौरα*, Klug.

The synonymy of this species also is puzzling. Not only is it sexually dimorphic, but the ground-colour of the female may be either white or ochreous. Klug stated that the types came "ex Arabia felici."

Dr. Dixey has carefully studied long series of this butterfly and a closely allied form from Aden, which he is convinced is quite distinct. While admitting that Klug's male insect might well have come from Arabia, he asserts that no such

(ochreous) female as that figured in the *Symbolae Physicae* has been received from Arabia since Klug's time. Shortly, he thinks that Klug had before him two nearly allied species, an Arabian male and an African female.

Meanwhile Swinhoe described the Aden species as *yerburi*, and Dixey is strongly of opinion that it would be convenient for that name to stand, and the name *daira* to be confined to the African species. Probably Klug's type (female) of *daira* came from Ambukôl.

Petherick took this species on the White Nile. Dunn found it on the Bahr al-Zarâfa. Loat took it near Kâkâ and at Mongalla. Selous took two males at Tawîla and other two near Tawfikîyâ. The Swedish expedition sent home four males and four females, from Abba Island, Renk and Kâkâ.

In 1909 I took a male at Khartûm, six males and four females at Ad-Duwêm, a female at Hillet Abbâs, and three males and two females at Tawîla.

In 1912 I captured a male between Sôba and Khartûm, and met with it more or less commonly all the way up the White Nile to Rejâf. My specimens vary in colour and even more in size, but the dwarfs were not localised, *e. g.* at Malêk two males were taken, one of them described as "a dwarf with very little black," the other as "a fine large specimen with much black." One male was yellowish in ground-colour; in some females there is an orange-red flush before the tip, but in a large specimen this is quite absent, the tip being broadly black.

Mrs. Waterfield took a number at Port Sûdân, where I found one of each sex. Rothschild took it on the Atbara, also at Shendî. Cholmley took a female "below Shelal mountain."

It occurs in Abyssinia, Somâliland and British East Africa.

58. *Teracolus evagore*, Klug.

The type is said to have come "ex Arabia deserta." Dr. Dixey considers *T. nouna*, Lucas, *T. saxeus*, Swinhoe, *T. glycera*, Butler, *T. demagore*, Felder, and *T. heuglini*, Felder, to be all synonyms of this variable species, which has a wide distribution almost throughout Africa, and extending to S. Arabia.

Petherick took a male on the White Nile, also a female which Butler referred to *demagore*, Feld. Dunn took it on

the Bahr al-Zarâfa (*glycera*). Loat met with it (*glycera*) commonly near Kâkâ and at Mongalla, also four males at Gondokoro. The Swedes seem to have found it pretty common at Renk and Kâkâ (*heuglini*). Selous took both sexes at Tawfikîyâ (f. *heuglini*).

I did not come across it in 1909, but in 1912 found it from Gebel Ahmad Agha (a degree and a half south of the furthest point reached by me in 1909), at most of the places visited right up to Rejâf. It was distinctly commoner south of Shambî [Lat. 7° 0' N.], being especially abundant at Mongalla [Lat. 5° 12' N.]. It varied in size, and the female varied in the proportion of black and orange in the tip of the fore-wing.

Col. Yerbury took it at Aden (*nouna* and *saxeus*), also on the Somali coast. Under the name *nouna* it is well known as the Algerian *Teracolus*. Its larva feeds on a species of *Capparis*.

59. *Teracolus ephyia*, Klug.

[Plate II, fig. 4 ♂, fig. 5 ♀, fig. 6 ♂ u. s.]

The type (male) of this little-known butterfly came from Ambukôl. Aurivillius (1. p. 439) gives as other localities “? Angola, ? Damaraland : Rehoboth (Coll. Staud.),” but the same author writing later (3. p. 59) says : “Mit sicherheit nur aus Nubien bekannt.”

The Swedish expedition took two males at Khartûm.

In 1909 I took four males and a female at Khartûm, and also four males at Sôba.

In 1912 I took three males near Sôba station, on the opposite side of the Blue Nile to the ruins of the city. I also took three males and a female at Kaderû, opposite to the battlefield of Kerreri (Omdurman).

The Hon. N. C. Rothschild took a *Teracolus* near Shendî, where it was abundant, and believes that he saw the same species on the battlefield of Kerreri in March 1900.* This he named *T. liagore*, Klug (18. p. 21), but Dr. Jordan, who kindly re-examined the specimens at my suggestion, agrees that they should be referred to *ephyia*.

The British Museum has two specimens, males, labelled “Upper Egypt.”

* In my two flying visits to the battlefield, in 1909 and 1912, I did not take any *Teracoli*, though I have a recollection of having seen one.

This *Teracolus* has a more restricted distribution than any that I have met with; my specimens were all taken within a dozen miles of Khartûm—the most southerly at Sôba [Lat. $15^{\circ} 32'$ N.]. Shendî is in Lat. $16^{\circ} 42'$ N., and Ambukôl in Lat. $18^{\circ} 4'$ N., so that the total range in latitude is but $2\frac{1}{2}^{\circ}$.

There is a specimen in the Hope collection taken by E. N. Bennett on the Upper Nile near the Pyramids of Meroë [Lat. $16^{\circ} 55'$ N.], which are not many miles north of Shendî. There is, however, another specimen, which seems to be referable to the same species, that was taken by "S. L. and H. Hinde" in the Kenya district of British East Africa—about on the Equator.

Very closely allied to *ephyia*, but separable from it, is *T. lais*, Butl., of which Aurivillius (3. p. 5) gives the distribution as from Damaraland to Natal. Prof. E. B. Poulton, in 1905, took a specimen at Artesia station, British Bechuanaland [Lat. 24° S.]. *T. lais* might be termed the representative species of *T. ephyia* in South Africa.*

Mr. Hinde's specimen was taken $15\frac{1}{2}^{\circ}$ south of my specimens of *ephyia*, and the extreme north of Damaraland is yet another 17° further south, so that whether it be referred to *ephyia* or to *lais*, it was found in an (at least apparently) extremely isolated position.

60. *Teracolus liagore*, Klug.

[Plate II, fig. 7 ♂, 8 ♀, 9 ♂ u. s.]

The type came from Ambukôl, though Kirby's Catalogue gives Arabia.

This is another little-known butterfly. Miss Sharpe [A Monograph of *Teracolus*, 1901, p. 128] considers *liagore* to be the dry-season form of *daira*, but on what grounds I know not. Dr. Dixey says it is impossible.

In 1909 I took a male at Ad-Duwêm [Lat. $14^{\circ} 0'$ N.], the only White Nile record that I know of. In 1912 I took a female near Sôba station.

[For the Hon. N. C. Rothschild's captures see the preceding species.]

Mr. Cholmley took four males in the district to the north of Suâkin. Mrs. Waterfield takes it at Port Sûdân, where I myself took seven males and five females.

* Compare Dr. Dixey's remarks, Proc. Ent. Soc. London (1912), p. cxli.

Aurivillius (3. p. 59) confines this species to Nubia, but the British Museum has two males and a female from Muscat, South-east Arabia.

The range of this species, though decidedly restricted, is wider than that of the last, reaching the Red Sea Littoral on the north-east, and going $1\frac{1}{2}^{\circ}$ above Khartûm on the White Nile towards the south.

I have a fine large female which differs from the example figured in that the transverse dark bar on the fore-wing is reduced to two spots, whereas the marginal black spots on the hind-wing are much more pronounced.

61. *Teracolus evarne*, Klug.

The type came from Ambukôl.

Butler calls the dry-season form *citreus*, and the geographical race occurring in Upper Egypt, the White Nile and Abyssinia, *xanthevarne*.

This butterfly was taken by Petherick on the White Nile (*citreus* and *xanthevarne*). Dunn took it on the Bahr al-Zarâfa. It was found in some numbers by Loat at Mongalla and Gondokoro. Selous took two females, one opposite Renk, the other at Tawfikîyâ. Two males and six females brought home by the Swedish expedition from Renk, Gebel Ahmad Agha and Kâkâ were referred by Aurivillius to "var. hib. *citreus*, Butl."

A solitary male was taken by myself in 1909 at Gebel Ên [Lat. $12^{\circ} 37' N.$], but in 1912 I brought back twenty-eight specimens from various places on the White Nile, extending from Gebel Ahmad Agha in Lat. $11^{\circ} 0' N.$ right up to Gondokoro. It was by far the commonest at Shambî [Lat. $7^{\circ} 0' N.$]. As it is not a very attractive insect on the wing the number of specimens brought home is not an exact measure of its abundance, for one's attention is apt to be diverted by more conspicuous things.

Rothschild found it common on the Atbara, but it was not reported by either Cholmley or Yerbury. At Port Sûdân Mrs. Waterfield looks upon it as the commonest butterfly.

It occurs in Abyssinia, Somâliland (*philippsi*, Butler), the Victoria Nyanza district, British East Africa, German East Africa and Senegal.

I detected a scent in five males; it was distinct and sweet in character, in one case compared to Freesia, but in another described as "somewhat medicinal."

62. *Eronia cleodora*, Hübner.

The Sûdân form is var. *erxia*, Hewitson, which is more similar to the Natal form than to the race with very wide black borders which is found in the Mombâsa district.

Loat took a wet-season male at Mongalla [Lat. $5^{\circ} 12' N.$]. Selous took a small wet-season male near Tawfikîyâ [Lat. $9^{\circ} 25' N.$]. The Swedes took a small (51 mm.) male as far north as Gebel Ên [Lat. $12^{\circ} 37' N.$].

In 1912 I took two males at Renk [Lat. $11^{\circ} 45' N.$], and saw another specimen at Kîrô [Lat. $5^{\circ} 22' N.$].

This handsome insect ranges over the whole of the Eastern side of Central and Southern Africa, and it also occurs in Angola.

63. *Eronia leda*, Boisduval.

In 1912 I secured a specimen of this very swift butterfly on the tiny island in the Sadd known as Hillet al-Nuwêr [Lat. $8^{\circ} 13' N.$], and saw others at Bôr [Lat. $6^{\circ} 13' N.$] and at Kîrô [Lat. $5^{\circ} 22' N.$].

It would appear that this conspicuous South African insect does not get further down the White Nile than the Sadd.

This species has almost the same but not quite as wide a range over the continent as the preceding.

64. *Leuceronia buquetii*, Boisduval.

Loat took a female at Gondokoro. Selous took a male at Tawîla.

In 1909 I took a female at Tawîla, and in 1912 took six specimens in all, viz. two males at Tawîla, two males at Masran Island, a female at Kâkâ wooding station, and a female at Malêk [Lat. $6^{\circ} 7' N.$].

Its northern limit, according to these records, is Tawîla [Lat. $13^{\circ} 16' N.$], whence came four out of the total of nine specimens.

Col. Yerbury took it at Aden [form *arabica*, Hopff.]; Thrupp took the same form in Somâliland.

It is found over nearly all Central and South Africa; it also occurs in Sierra Leone and Madagascar.

I suspected a faint sweet scent in a male specimen, and noted a slight "scarcely agreeable" scent in another.

65. *Catopsilia florella*, Fabricius.

Dunn took this on the Bahr al-Zarâfa. The Swedes took a solitary male to the south of Kâkâ.

It was common during my stay at Khartûm in 1909, less so in 1912. Though I did not myself take this butterfly on the White Nile above Khartûm, it is very possible that I may have seen it.

Rothschild mentions it as common round Khartûm, and also as seen at Shendî. Cholmley took several north of Suâkin. Mrs. Waterfield found it common enough at Port Sûdân, though I did not myself see it there. Col. Yerbury took it freely at Aden. Peel found it abundant in Somâliland, and it extends even to Sokotra, where Bennett noted of it: "Flight strong," a fact that no one acquainted with the insect will dispute.

It ranges over Arabia, the whole of Africa south of the Sahara, and occurs in Madagascar and the Mascarenes.

At Khartûm I repeatedly saw this butterfly settle upon *Cassia obovata*, Callad., a dwarf shrub with yellow flowers that grows commonly on the sand in the outskirts of the city. Col. Nurse says that its larva feeds upon species of *Cassia*.

The strong luscious sweet scent of the males, noticed by me in South Africa, was confirmed.

66. *Terias senegalensis*, Boisduval.

Butler considered his *chalconiaeta* to be an insular race of this species.*

Found by Dunn on the Bahr al-Zarâfa. Loat took three males and a female at Gondokoro; the males were "dry," the female "intermediate."

In 1912 I took a single female, of the dry-season form, and saw another specimen, at Masran Island [Lat. 12° 45' N.]. Perhaps that may be taken as about the extreme northern limit of this butterfly, which is found throughout Africa south of the Sahâra, in Madagascar, and in Southern Arabia.

Yerbury took the form *chalconiaeta* at Aden.

67. *Terias brigitta*, Cramer.

Taken by Dunn on the Bahr al-Zarâfa. Loat took one of each sex at Gondokoro in January 1902; the male was

* Ann. Mag. Nat. Hist., Ser. 7, vol. i (1898), p. 67.

distinctly of the wet-season form, the female "wet" or "intermediate."

In 1912 I took a male at Kîrô, another at Lâdô, also a male and two females at Gondokoro.

As butterflies of the genus *Terias* are quite easily seen when on the wing, it might appear allowable to conjecture that *brigitta* does not extend far north of Lake Nô [Lat. 9° 30' N.], but the fact that specimens of the preceding species turned up no less than three degrees north of that place makes one cautious.

T. brigitta is found in Abyssinia, Somâliland and throughout tropical and South Africa.

68. *Colias hyale*, auctorum, f. *marnoana*, Rogenh.

In 1909 I found this butterfly almost abundant in the beanfields at the junction of the Blue and White Nile, just below Khartûm, near a village called Mogran.

During my visit in 1912 I did not work that exact locality, but I netted two males at the edge of a large cottonfield at Kadarû, opposite to Kerreri, and a few miles to the north of Khartûm.

Peel took a female in Somâliland in 1897. It is fairly common at Port Sûdân, and it occurs in Abyssinia, but Col. Yerbury tells me that the genus has no representative at Aden.

C. hyale is very widely distributed over the Palaearctic region.

Sub-family PAPILIONINAE.

69. *Papilio demodocus*, Esp.

Taken by Dunn on the Bahr al-Zarâfa; by the Swedes at Khartûm, where the Rothschild party found it abundant among lemon trees.

I saw but few at Khartûm in 1909; at the time of my second visit, however, it was quite common among limes (*Citrus limetta*).

Mr. H. H. King assured me that *demodocus* is found up the White Nile, but could give no particulars.

Selous took two at Ardeiba in the Southern Bahr al-Ghazâl. It occurs at Aden, also in Somâliland, and is found throughout tropical and South Africa.

70. *Papilio pylades*, Cramer.

Loat took a female at Gondokoro, noting it as "rare."

Selous took it commonly at Ardeiba in the Southern Bahr al-Ghazâl; Trimen (24.) notes that all Selous' specimens, though some of them are rather small, are of the typical West Coast form.

For the typical *pylades* Aurivillius (3. p. 21) gives Senegal to the White Nile, Northern Congo.

Family HESPERIIDAE

71. *Sarangesa eliminata*, Holland.

The Swedish expedition took two specimens, both males, on the White Nile, but the locality is not specified; Aurivillius suggests that perhaps *Cyclopides phidyle*, Walker [Entomologist, v, p. 56, 1870], may be this species.

Peel took it in Somâliland. It occurs also in British East Africa, Rhodesia and in Cape Colony.

Possibly this is identical with *S. tsava*, B.-Baker, a common insect at Port Sûdân.

72. *Gegenes nostradamus*, Fabricius.

Loat took three males and a female near Kâkâ [Lat. 10° 40' N.].

In 1912 I took one near Sôba station and two at Khartûm.

In 1909 I took one (a male) at Aswân; I had previously taken it in Northern India. Bennett took a female in Sokotra, and Yerbury met with it at Aden [form *karsana*, Moore]. It occurs in British East Africa; northwards it extends to Cyprus; westwards to Gibraltar; and eastwards to Afghânistân and the Panjâb. It is a dingy insect, and very inconspicuous, so that it might easily be overlooked.

73. *Parnara mathias*, Fabricius.

Loat took a male near Kâkâ.

In 1912 I took one at Tombê [Lat. 5° 43' N.] and another at Rejâf wooding station [Lat. 4° 50' N.].

Rothschild found it commonly at Cairo, and Yerbury took it freely at Aden.

This is a very common and widely-distributed species, but like the preceding it is inconspicuous and easily overlooked. It occurs in British East Africa, on the Zambesi and in Natal; it is found also in Cyprus and extends to India, Ceylon and the Philippines.

74. *Parnara fatuellus*, Hopffer.

This species was taken by Capt. Dunn on the Bahr al-Zarâfa, but I have no other records of it in that part of the world; it occurs in the Victoria Nyanza district, Portuguese East Africa, Rhodesia and Natal.

75. *Rhopalocampta forestan*, Cramer.

This fine Skipper was also taken by Capt. Dunn, but I have no other record.

Like the preceding this insect has a wide range, including Uganda, the Congo, British East Africa, Rhodesia, Natal, the Gambia and Sierra Leone.

A perusal of the above list leads to certain conclusions, which are made even more obvious by grouping the species in families and sub-families.

	Total Species found on White Nile.	Total Species found in S. Arabia.	Species common to both.
<i>Danainae</i> . . .	2	1	1
<i>Satyrinae</i> . . .	1	2	1
<i>Nymphalinae</i> . .	10	8	7
<i>Acraeinae</i> . . .	5	0	0
<i>Lycaenidae</i> . . .	17	13	10
<i>Pierinae</i> . . .	33	19	16
<i>Papilioninae</i> . .	2	1	1
<i>Hesperiidae</i> . . .	5	6	2
<hr/>			
Total . . .	75	50	38

The Butterfly Fauna of the White Nile is a very poor one, comparable indeed, as far as numbers go, with that of the British Isles.

Several groups are very poorly represented, both as regards species and individuals, notably the *Satyrinae*, of which but a single specimen was found among several hundreds of butterflies sent home.

That typically African group, the *Acraeinae*, was represented by very few individuals; the same is true of the *Papilioninae* and the *Danainae*, while the *Nymphalinae* are not much more numerous.

The *Lycaenidae* contribute more species, but they are for the most part inconspicuous, and none of them strikingly common.

There are many species of *Pierinae*, and several of these are abundant, or at least common, so that when individuals are taken into consideration this group by far outnumbers all the others put together.

In the S. Sûdân, as everywhere, there are some favoured spots where butterflies are found in unusual numbers. One may spend an hour in such a spot among clouds of "Whites" and "Yellows" without catching sight of a Swallow-tail, a Nymphalid or a Skipper.

The impression left on the mind is that throughout the Anglo-Egyptian Sûdân, alike on the Red Sea coast and on the White Nile, from Khartûm right up to Rejâf, the beautiful, but puzzling genus *Teracolus* is dominant.

The most abundant and generally distributed species are *T. evarne* and *T. eupompe*, but several others—*T. दौरا*, *T. evagore*, *T. phisadia*, *T. halimede* and *T. protomedia*, are common enough where they occur, and it is indeed a beautiful and a bewildering sight to see these "orange-tips" and "crimson-tips," with here and there a "purple-tip" flying over the dead grass or the flowering shrubs.

That the Butterfly Fauna of the White Nile has a decidedly desert character was noticed long ago by Butler (9. p. 25) and by Dixey (12. p. 142). This is made very clear by a comparison with the fauna of S. Arabia, brought to our knowledge mainly by the labours of Col. Yerbury in Aden and its neighbourhood.

A glance at the preceding table shows that, as might have been expected, the South Arabian Fauna is even poorer than that of the White Nile, but—with the notable exception of the total absence of the great genus *Acraea*—the distribution between the families is very similar. It is very remarkable that out of the Arabian total of fifty species, no less than thirty-eight are found on the White Nile.*

Although Yerbury's operations were confined to a comparatively small area it may be assumed that his list is nearly complete, whereas mine is very far from such perfection. Collectors with more time at their disposal

* It is not possible when comparing lists to be certain that different authors mean the same things by the same names. But this difficulty has been minimised by the fact that neither Dr. Dixey nor Col. Yerbury are "splitters." My conclusions are mainly, though not entirely, founded upon the great Hope Collection, in which the *Pierinae* have been so admirably arranged by Dr. Dixey.

will without doubt add many species to my list, more especially among the less conspicuous *Lycaenidae* and *Hesperiidae*, and will give new localities to many species already recorded.

The following lists illustrate the relationship between the two faunas, and may, I hope, be instructive in other ways. The first (and longer) list gives all the butterflies for which I have records from Khartûm up to Ad-Duwêm; the four shorter lists give the *additional* species met with for each 2° of latitude as one ascends the river.

SPECIES RECORDED IN LATITUDES 16° N.—14° N.

(Khartûm to Ad-Duwêm inclusive.)

1. <i>D. chrysippus</i>	A	45. <i>T. chrysonome</i>	A
4. <i>P. cardui</i>	A	48. <i>T. protomedia</i>	A
5. <i>P. cebrene</i>	A	49. <i>T. halimede</i>	A
8. <i>H. misippus</i>	A	54. <i>T. eupompe</i>	A
19. <i>P. baeticus</i>	A	57. <i>T. दौरα</i>	
21. <i>T. theophrastus</i>	A	59. <i>T. ephyia</i>	
25. <i>C. eleusis</i>		60. <i>T. liagore</i>	A
27. <i>Z. lysimon</i>	A	65. <i>C. florella</i>	A
28. <i>C. trochilus</i>	A	68. <i>C. marnoana</i>	
30. <i>L. otacilia</i>		69. <i>P. demodocus</i>	
32. <i>A. ubaldus</i>	A	71. <i>S. eliminata</i> ? *	
39. <i>B. mesentina</i>	A	72. <i>P. nostradamus</i>	
41. <i>C. eulimene</i>			

ADDITIONAL SPECIES RECORDED IN LATITUDES
14° N.—12° N.

(S. of Ad-Duwêm to Gebel Ên.)

14. <i>A. acerata</i>		43. <i>T. phisadia</i>	N A
20. <i>L. bibulus</i>		51. <i>T. eris</i>	N
33. <i>D. livia</i>	N A	53. <i>T. phlegyas</i>	P
34. <i>V. antalus</i>	N	56. <i>T. evippe</i>	P A
35. <i>H. philippus</i>		61. <i>T. evarne</i>	P
36. <i>H. eriphia</i>	N A	62. <i>E. cleodora</i>	
37. <i>B. gidica</i>		64. <i>L. buquetii</i>	A
42. <i>T. calais</i>	N A	66. <i>T. senegalensis</i>	A

* It is not stated where the Swedish expedition came across this butterfly.

ADDITIONAL SPECIES RECORDED IN LATITUDES
12° N.—10° N.

(Renk to Melût inclusive.)

11. <i>B. ilithyia</i>	A	47. <i>T. amelia</i>	
17. <i>A. encedon</i>		50. <i>T. pleione</i>	N A
22. <i>T. telicanus</i>	N A	52. <i>T. hetaera</i>	
24. <i>C. cretosus</i>		58. <i>T. evagore</i>	P A
26. <i>C. malathana</i>	A	73. <i>P. mathias</i>	N A
38. <i>B. severina</i>	A		

ADDITIONAL SPECIES RECORDED IN LATITUDES
10° N.—8° N.

(Kôdôk to Hillet al-Nuwêr inclusive : mostly Sadd.)

2. <i>T. petiverana</i>		29. <i>L. amarah</i>	A
6. <i>P. clelia</i>	A	40. <i>P. venata</i>	
7. <i>P. boopis</i>		55. <i>T. achine</i>	P
12. <i>B. goetzius</i>	A	63. <i>E. leda</i>	
13. <i>A. phalantha</i>		67. <i>T. brigitta</i>	
16. <i>A. natalica</i>		74. <i>B. fatuellus</i>	
18. <i>A. abdera</i>		75. <i>R. forestan</i>	

ADDITIONAL SPECIES RECORDED SOUTH OF LAT. 8° N.

(Shambî to Rejâf : mostly above the Sadd.)

3. <i>Y. asterope</i>	N A	31. <i>A. jesous</i>	N A
9. <i>H. daedalus</i>	A	44. <i>T. castalis</i>	
10. <i>N. agatha</i>		46. <i>T. vesta</i>	
15. <i>A. terpsichore</i>		70. <i>P. pylades</i>	
23. <i>C. usemia</i>			

The letter A indicates that the species is recorded also for S. Arabia.

The letter N signifies that the species is known to occur north of Khartûm, and that therefore it may well be expected to occur further north than yet recorded.

The letter P signifies that the species was found by Petherick, and as the precise localities in which his captures were made are unknown, it is quite possible that he may have found the species further north.

As might have been expected it is seen that north of Kôdôk—roughly speaking north of the Sadd—the fauna

is decidedly more Arabian, or Desert, in character than it is to the south.

Again as might have been expected the great majority of the species are Ethiopian, that is to say peculiar to the Province made up of Africa, with the adjacent islands, and Southern Arabia. The species that extend beyond that Province are eighteen in number, viz. :—

2. *Ypthima asterope*. Syria.
4. *Pyrameis cardui*. Cosmopolitan.
8. *Hypolimnna misippus*. India, Ceylon, Malaya, etc.
11. *Byblia lithyia*. India, Ceylon.
13. *Atella phalantha*. India, Ceylon, Malaya, China, Japan.
19. *Polyommatus baeticus*. Cosmopolitan.
21. *Tarucus theophrastus*. Persia, Balûchistân, India, Ceylon, Burma, S. Europe.
22. *Tarucus telicanus*. India, Ceylon, Burma, Java, China, Europe.
27. *Zizera lysimon*. S. Europe, W. Asia, India, Ceylon, Malaya, Australia.
30. *Chilades trochilus*. S.E. Europe, Central Asia, India, Malaya.
31. *Azanus jesus*. }
32. *Azanus ubaldus*. } Balûchistân, India, Ceylon, Burma.
39. *Belenois mesentina*. Persia, Afghanistân, India, Ceylon.
42. *Teracolus calais*. Persia, Sind, N.W. India.
43. *Teracolus phisadia*. Syria (Lebanon).
68. *Colias hyale*. Palaearctic Province.
72. *Gegenes nostradamus*. Gibraltar, Cyprus, Afghanistân, Panjâb.
73. *Parnara mathias*. Cyprus, India, Ceylon, Philippines.

There are a few species which may be said just to touch the northern fringe of our district in the neighbourhood of Khartûm.

Such are :—

25. *Catochrysops eleusis*.
30. *Lycaenesthes otacilia*.
41. *Calopieris eulimene*.
45. *Teracolus chrysonome*.
59. *Teracolus ephyia*.
68. *Colias marnoana*.

Of these *L. otacilia* is an East African and South

African species, and probably has a wider range up the river than has been yet recorded.

The other five are more Palaearctic in character, or are borderland species. *C. eulimene*, so far as is known, is confined to the Anglo-Egyptian Sûdân, and I know of only one example of *T. ephyia* taken outside that country. *Synchloë glauconome* has a wider range to the north, at Shendî it gets within sixty-five miles of Khartûm, but does not actually enter our district.

In like manner there are three butterflies which just attain the southern end of our district, viz. :—

23. *Castalius usemia*.

46. *Teracolus vesta*.

70. *Papilio pylades*.

These are all Central or South African forms.

Though well known to have a wider range outside our limits, there are three species which, so far as actually recorded have a very restricted range on the White Nile :—

Teracolus halimede, 13° 22'–10° 40'.

Teracolus pleione, confined to Kâkâ, Lat. 10° 40', excepting so far as the locality of Petherick's specimens is unknown.

Teracolus phisadia, 13° 22'–10° 50', but presumably Capt. Dunn's specimens came from something like 2° further south.

The most northerly limit of the great genus *Acraea* would seem to be attained by *A. acerata* (f. *vinidia*) in Lat. 12° 37' N.

The sole species peculiar to the White Nile district would appear to be the little-known, and hitherto rare, *Pinacopteryx venata*.*

Any one dealing with the Butterflies of N.E.* Africa must depend greatly on the magnificent work of Klug. The writer has had the good fortune to take all his *Pierinae*.

* While this paper was going through the press my attention was called by Commander J. J. Walker to the description by A. G. Butler [Ent. Mo. Mag., vol. ii, p. 169, 1866] and a good wood-cut of *Aphnaeus* (?) *marmoreus*, n. sp. The type, a female, was taken by Petherick on the White Nile, and would appear to be unique; it now stands in the National Collection next to the S. African *Stugeta bowkeri*, Trimen.

The Hon. N. C. Rothschild's captures on the R. Atbara derive especial interest from the fact that, since Klug's time, no collector has worked so near to Klug's locality—Ambukôl.

I have to thank alike draughtsman and printer for the admirable plate.

Col. J. W. Yerbury, R.A., and Mr. Roland Trimen, F.R.S., have kindly assisted me with valuable information, the latter having placed his MS. notes on Mr. F. C. Selous' captures in the spring of 1911 at my disposal.

Prof. E. B. Poulton, F.R.S., and his able assistants have, as always, been most kind and helpful.

Dr. F. A. Dixey, F.R.S., has allowed me to draw upon his unique knowledge of the *Pierinae* and helped to guide me through the mazes of the genus *Teracolus* and steered me clear of many pitfalls.

LOCALITIES MENTIONED.

	Lat. N.		Lat. N.
[Port Sûdân	19° 35']	Melût	10° 27'
[Suâkin	19° 8']	[Berbera(Somâliland)	10° 25']
Ambukôl	18° 4'	Kôdôk (Fâshôda)	9° 54'
El-Nakhîla	17° 25'	Lûl	9° 47'
Shendî	16° 42'	Wâw	9° 40'
Kerreri	15° 47'	Malakal	9° 35'
Kadarû	15° 46'	Tawfikîyâ	9° 25'
Khartûm	15° 37'	Dûlêb (R. Sobat)	9° 22'
Sôba	15° 32'	Khor Atâr	9° 20'
Ad-Duwêm	14° 0'	Lake Nô	9° 30'
Kawwah	13° 45'	Bahr al-Zarâfa	9° 25'—7° 0'
Abba Island, "Mahdi's		Hillet al-Nuwêr	8° 13'
place "	13° 22'	Shâmbî	7° 0'
Tawîla	13° 16'	Kamîsa	6° 50'
Kosti	13° 10'	Bôr	6° 13'
Kôz Abû Gûma	13° 8'	Malêk	6° 7'
Hillet Abbâs	13° 7'	Tombê	5° 43'
Masran Island	12° 45'	Kîrô	5° 22'
[Aden	12° 45']	Mongalla	5° 12'
Gebel Ên	12° 37'	Lâdô Wooding Stn.	5° 8'
[Sokotra	12° 30']	Lâdô	5° 2'
Renk	11° 45'	Gondokoro	4° 54'
Gebel Ahmad Aghâ	11° 0'	Rejâf Wooding Stn.	4° 50'
Mashra Zarâfa	10° 50'	Rejâf	4° 45'
Kâkâ	10° 40'		



EXPLANATION OF PLATE II.

- FIG. 1. *Pinacopteryx venata*, ♂.
2. " " ♀.
3. " " ♂, underside.
4. *Teracolus ephyaia*, ♂.
5. " " ♀.
6. " " ♂, underside.
7. *Teracolus liagore*, ♂.
8. " " ♀.
9. " " ♂, underside.



Horace Knight del. et lith.

West, Newman chr.

- | | | |
|---------------------------|----------|---------------------|
| 1. PINACOPTERYX VENATA ♂. | 2 do. ♀. | 3. do ♂, underside. |
| 4. TERACOLUS EPHYIA ♂. | 5 do. ♀. | 6. do ♂, do. |
| 7. do. LIAGORE ♂. | 8 do. ♀. | 9. do ♂, do |

[The spelling of place-names is based on that of Dr. E. A. Wallis Budge in "Cook's Handbook for Egypt and the Sûdân," 2nd edition, 1906; "â" pronounced as "a" in "father"; "a" pronounced as "u" in "mud"; "ê" pronounced as "a" in "mane"; "î" pronounced as "e" in "meet"; "û" pronounced as "oo" in "boot."]

8

A LIST OF BUTTERFLIES
COLLECTED DURING THE LAST TEN YEARS
IN BRITISH EAST AFRICA.

BY

REV. K. ST. AUBYN ROGERS, F.E.S.

Reprinted from "The Entomologist's Monthly Magazine," 2nd Series, Vol. xxiv.

The knowledge of the butterfly fauna of Tropical Africa has been extending with great rapidity during the last few years. Many papers have been published on collections made in the country, so that I have not found it possible to collate the results of the numerous naturalists who have collected there.

However, I have had the opportunity to make collections over a considerable part of the Protectorate, and it may be of some interest to publish the results.

The area in which this collection was made is bounded on the east by the coast, and on the west by the Rift Valley,

The following list can make no claim to be complete, as there remain many districts in which I have not collected at all, and others in which I have collected but little, but I have thought it best only to record those species which I have myself met with.

For the identification of the numerous species I am deeply indebted to the kindness of Prof. E. B. Poulton, and those who work with him in the Hope Department of the Oxford University Museum, especially Dr. F. A. Dixey, Mr. H. H. Druce, and Mr. H. Eltringham. There still remain a few species which have not yet been identified, or which may be new.

The whole of the species, with the possible exception of some of the most common, are represented in the Hope Department, where they may be studied.

- 1.—*Danaida chrysippus*, L. Abundant everywhere, the form *dorippus*, Klug, being far more abundant than the type form. This species generally prefers open country, but at the end of the dry season it may be found in forests.
- 2.—*Danaida limniace*, Cram. Generally common in forest country, and sometimes very abundant.
- 3.—*Melinda formosa*, Godm. Taita, Taveta, Nairobi, North Kikuyu. Not uncommon.
- 4.—*Amauris niavius*, f. *dominicanus*, Trim. A forest species often very common. It has a slow floating flight like that of most *Danaidæ*.
- 5.—*Amauris ochlea*, Boisd. Though generally haunting forest, this species is not so confined to it as *A. dominicanus*. Coast district, Taita, Taveta.
- 6.—*Amauris albimaculata*, Butl. Taita, Nairobi, North Kikuyu. Generally abundant. I have no doubt that *A. echeria* also occurs, but it is not distinguishable on the wing, and all my specimens have been *A. albimaculata*.
- 7.—*Melanitis leda*, L. Abundant everywhere.
- 8.—*Gnophodes parmeno*, f. *diversa*, Butl. Taveta, Nairobi. Generally found in dense forest. Not common.
- 9.—*Mycalesis dentata*, E. M. Sharpe. North or South Kikuyu, Kenia Forest. Not uncommon.
- 10.—*Mycalesis kenia*, Rogenh. Nairobi Forest. Sometimes common.

- 11.—*Mycalesis safitza*, Hew. Ubiquitous.
- 12.—*Henotesia perspicua*, Trim. Common and widely distributed.
- 13.—*Physcæneura leda*, Gorst. Coast district. Taita. Common.
- 14.—*Neocænura duplex*, Butl. Taita, Taveta. Not uncommon.
- 15.—*Neocænura gregorii*, Butl. Taita. Ukambani. South Kikuyu. Common.
- 16.—*Ypthima asterope*, Klug. Common and widely distributed. The eye spots on the underside vary a good deal in number.
- 17.—*Ypthima itonia*, Hew. North and South Kikuyu. Not uncommon.
- 18.—*Pardopsis punctatissima*, Boisd. Common and widely distributed, especially in the Coast district. It frequents forest as well as open country.
- 19.—*Acræa rabbaia*, Ward. The Coast district. Fairly common in forest and woodlands.
- 20.—*Acræa zonata*, Hew. The Coast hills. This is a forest insect and flies somewhat higher than most of its congeners. It is rather rare.
- 21.—*Acræa cuva*, Smith. The Coast hills. Also a forest insect with a lofty flight, by no means easy to capture, as it has a tantalising habit of floating about out of reach of the net. It is a rare species.
- 22.—*Acræa cerasa*, Hew. South Kikuyu. This species frequents forest, and sometimes swarms in that near Nairobi.
- 23.—*Acræa quirina*, Fabr. Not common on the Coast hills.
- 24.—*Acræa baxteri*, E. M. Sharpe. Aberdare Mountains. Also one specimen high up on the Dabida Hills in the Taita country.
- 25.—*Acræa insignis*, Dist. Widely distributed and not uncommon. The black on the hind-wings is very variable in extent, and in the specimens from the Coast hills is generally much reduced.
- 26.—*Acræa neobule*, Doubl. and Hew. Common and widely distributed. There is a large, pale form found in the forests on the Coast hills.
- 27.—*Acræa satis*, Ward. Found only in the Coast district, generally in forest country. It is not generally common.
- 28.—*Acræa asboloplintha*, f. *rubescens*, Trim. North Kikuyu and slopes of Mount Kenia; the type form being found to the west of the Rift valley. The females of the *rubescens* form are generally white, and not red like the type form.
- 29.—*Acræa zetes acara*, Hew. Generally common.
- 30.—*Acræa anemosa*, Hew. Generally common.
- 31.—*Acræa pseudolydia astrigera*, Butl. Ukambani. This species is generally fairly common where it occurs, but its range is much more restricted than that of the two preceding species.
- 32.—*Acræa areca*, Mab. Generally distributed and fairly common.
- 33.—*Acræa perenna*, Doubl. and Hew. Taita. I have only obtained a single specimen, but it may have been passed over.

- 34.—*Acræa chilo*, Godm. Coast district. Taita, Taveta. The species is often common. The female was long known as *A. crystallina*, which is not surprising, as both wings are quite transparent, and the spots are obsolete in the fore wings and much reduced in the hind wings.
- 35.—*Acræa acrita*, Hew. Taita, Taveta, Ukambani, Kikuyu. Generally common. Most specimens are of the form *pudorina*.
- 36.—*Acræa equatorialis*, Neave. Coast district, Taita. Not uncommon. This form has recently been separated from the type by Mr. Eltringham under the name of *anæmia*.
- 37.—*Acræa pudorella*, Auriv. Taita, Taveta. Apparently not common.
- 38.—*Acræa caldarena*, Hew. Rabai. This species does not seem by any means common. The examples taken are not typical lacking as they do the pronounced black tip to the fore-wings.
- 39.—*Acræa bræsia*, Godm. Generally distributed. This species is particularly abundant in Taita, where the form *regalis* also is of frequent occurrence.
- 40.—*Acræa oncæa*, Hopff. Widely distributed and often common.
- 41.—*Acræa cæcilia*, Fabr. Not uncommon in Ukambani and probably occurs elsewhere.
- 42.—*Acræa natalica*, Boisd. Generally abundant.
- 43.—*Acræa terpsichore*, L. Ubiquitous. I once found a pupa all golden on a yellow leaf. Each day when the sun was hot it raised itself so as to lie along the underside of the leaf. Was this due to the heat of the sun?
- 44.—*Acræa excelsior*, Sharpe. I have only taken this at considerable elevations on the Aberdare Mountains up to 11,000 ft.
- 45.—*Acræa acerata*, Hew. Taita, Kikuyu. All my specimens of this common species seem to be of the form *tenella*.
- 46.—*Acræa bonasia alicia*, Sharpe. Ukambani, Kikuyu, Kenia. Often exceedingly abundant. I once counted 460 on one small tree.
- 47.—*Acræa uvui*, Smith. Kikuyu, Kenia. Not uncommon. It is not possible to distinguish this from the preceding on the wing.
- 48.—*Acræa cabira*, Hopff. This is a common species everywhere except in the coast district. It is very variable.
- 49.—*Acræa pharsalus*, Ward. Taita, North Kikuyu. Generally rather uncommon.
- 50.—*Acræa encedon*, L. Ubiquitous. The *daira* form seems to be the most numerous, but all forms occur.
- 51.—*Acræa aubyni*, Eltr. Coast district. This species does not seem common. It flies rather higher than most of its congeners but not rapidly.
- 52.—*Acræa johnstoni*, Godm. Taita, Taveta, Kikuyu, Kenia. A most protean species which seems to have been modified in mimicry of several species of *Danaidæ* and *Planema*.

- 53.—*Acræa lycoa fallax*, Rogenh. North Kikuyu, Kenia. This species cannot be distinguished on the wing from the commonest form of the preceding.
- 54.—*Acræa esebria*, Hew. Coast district, Taita, Taveta. Not uncommon.
- 55.—*Acræa ansorgei*, Gr. Smith. A single specimen from Limoru which has all the pale areas creamy white.
- 56.—*Planema quadricolor*, Rogenh. N. Kikuyu, Kenia. Generally rather rare, but I once saw several in Kenia Forest.
- 57.—*Planema montana*, Butl. Coast district, Taita, Taveta. Not uncommon.
- 58.—*Lachnoptera ayresi*, Trim. Coast district, Taveta, Nairobi. Not generally common, but males are sometimes abundant in Nairobi Forest.
- 59.—*Atella columbina*, Cram. The Coast district. It is so extremely like the next following species that it is often passed over and will probably be found elsewhere.
- 60.—*Atella phalantha*, Drury. Ubiquitous.
- 61.—*Brenthis hanningtoni*, Elwes. Very abundant on Kenia and Aberdare Mountains above 6,000 ft. It is the commonest butterfly in the bamboo jungle.
- 62.—*Hypanartia hippomene*, Hübn. Taita, South Kikuyu, North Kikuyu. Common above 5,000 ft.
- 63.—*Hypanartia schæneia*, Trim. South Kikuyu, North Kikuyu. Much less common than the preceding.
- 64.—*Pyrameis abyssinica*, Feld. South Kikuyu and North Kikuyu. Common.
- 65.—*Pyrameis cardui*, Linn. Ubiquitous.
- 66.—*Precis orithyia madagascariensis*, Guen. Common everywhere. Frequents open paths.
- 67.—*Precis clelia*, Cram. Ubiquitous.
- 68.—*Precis hierta cebrene*, Trim. Generally common, especially in dry places.
- 69.—*Precis westermanni*, Westw. South and North Kikuyu. Common. This species is more addicted to woodlands than the foregoing.
- 70.—*Precis sesamus*, Trim. North and South Kikuyu, Ukambani, above 4,000 ft. The wet form is generally prevalent except from June to September, but both may be seen flying together not unfrequently.
- 71.—*Precis antilope*, Feisth. Coast hills, Taita, Taveta. The dry form seems more prevalent than the wet form.
- 72.—*Precis aurorina*, Butl. Taita, North and South Kikuyu. Fairly common.
- 73.—*Precis archesia*, Cram. Common in North Kikuyu. The dry form is very rare.
- 74.—*Precis limnoria*, Klug. Rare in the Coast district, but common in Taita and Taveta. It also occurs in Ukambani. This form is probably conspecific with the preceding.
- 75.—*Precis elgiva*, Hew. Coast district, Taita, Taveta, North and South Kikuyu. Common.

- 76.—*Precis natalica*, Felder. Common and widely distributed.
- 77.—*Precis stygia*, Auriv. I have only met with this at Kijabe.
- 78.—*Catacroptera cloanthe*, Cram. Widely distributed.
- 79.—*Salamis nebulosa*, Trim. Coast district, Taita, Taveta. Common.
- 80.—*Salamis parhassus*, Drury. Widely distributed. Common.
- 81.—*Salamis cacta*, Fabr. Coast hills, Taita. This species is by no means common in E. Africa.
- 82.—*Hypolimnas misippus*, Linn. Ubiquitous and abundant. Breeding experiments indicate that the type form and the *inaria* form bear a Mendelian relationship, the type form being dominant. The two forms are equally common.
- 83.—*Euralia deceptor*, Trim. This species is often quite common in the coast district. I have not met with it elsewhere.
- 84.—*Euralia dubius*, Pal. de Beauv. The form *wahlbergi*, Wallengr., is not uncommon in the Coast district and is also found in Taita, Taveta, and Ukambani. The form *mima*, Trim., is also found in Taita and Ukambani, but I have never seen it in the Coast district where its model (*Amauris albinaculata*) is absent. The two forms, though very different in appearance, have been proved by breeding to belong to one species.
- 85.—*Euralia usambara*, Ward. This fine species is only found in the Coast district and that but rarely.
- 86.—*Eurytela hiarbas*, Drury. With the exception of the Coast district this species is common everywhere where there is any bush.
- 87.—*Eurytela dryope*, Cram. Ubiquitous.
- 88.—*Neptidopsis ophione*, Cram. Generally common.
- 89.—*Neptidopsis fulgurata*, Boisd. By no means uncommon in the Coast district, where it to some extent replaces the preceding species.
- 90.—*Byblia ilithyia*, Drury. Abundant everywhere on grass lands.
- 91.—*Crenis morantii*, Trim. North Kikuyu. Not common.
- 92.—*Crenis boisduvali*, Wallengr. North Kikuyu. The most common of the genus.
- 93.—*Crenis natalensis*, Boisd. Coast hills, Kikuyu. Not common.
- 94.—*Cyrestis camillus*, Fabr. Though widely distributed this species is not generally common.
- 95.—*Neptis saclava*, Boisd. Generally abundant.
- 96.—*Neptis agatha*, Stoll. The most abundant of the genus. It varies considerably in size.
- 97.—*Neptis seeldrayersi*, Auriv. Coast district. Taveta. It is not easy to distinguish between this species and large specimens of the preceding, and it is liable to be overlooked.
- 98.—*Neptis trigonophora*, Butl. Coast district. Nairobi. This species also resembles *N. agatha* on the wing. It is much less common.

- 99.—*Neptis goochi*, Trim.—Coast district. Taveta. This species seems to intergrade towards *N. melicerta*. All these species of *Neptis* are very similar on the wing and have the same habits, so that it is easy to pass over the less common forms.
- 100.—*Neptis incongrua*, Butl. The tops of the higher Taita hills, Kinangop. Not uncommon. This species resembles *Eurytela hiarbas* when on the wing and the flight is very similar. On one occasion the two species were netted together as they circled round each other, and it was only after capture that they could be differentiated.
- 101.—*Neptis woodwardi*, Sharpe. North Kikuyu and Kinangop. Not generally common.
- 102.—*Pseudacræa lucretia expansa*, Butl. Coast district. Nairobi. Generally fairly abundant.
- 103.—*Pseudacræa trimeni*, Butl. Common in the Coast hills, but distinctly uncommon at Taveta.
- 104.—*Pseudacræa rogersi*, Trim. The types were taken at Shinba and Rabai. No other specimens have been met with. It is probably a local form of the W. Africa *Ps. eurytus*, Linn.
- 105.—*Aterica galene*, Brown. The Coast hills. A common species in forest country.
- 106.—*Hamanumida dædalus*, Fabr. Generally distributed and often common. Usually found in more or less open country.
- 107.—*Euphædra eleus*, Drury. The Coast hills. This species seems rare and is only found in forests.
- 108.—*Euphædra neophron*, Hopff. The Coast hills. Taita, Taveta. This beautiful species is abundant and is not so confined to forest as most of the group. I have often seen it in my garden at Rabai.
- 109.—*Euryphene senegalensis*, Herr.-Schaeff. The Coast district, Taveta. I have found this insect common in the Coast district. It is more particularly addicted to coco-nut plantations and gardens, and is seldom found in the real forest.
- 110.—*Euryphene chriemhilda*, Staud. The Coast hills. By no means uncommon in natural forest. It is hardly ever found flying with the preceding species.
- 111.—*Euryphura achlys*, Hopff. The Coast hills. This is also a forest species, and is often seen with *Euryphene chriemhilda*. It often frequents the gateways of native villages when these are in forest country.
- 112.—*Euptera kinugnana*, Smith. I have received one specimen of this rare species from Shimba, near Mombasa.
- 113.—*Harma* (n. sp.?) One female on the top of the Dabida hills in Taita.
- 114.—*Euzanthe wakefieldi*, Ward. Coast district. Taita, Taveta. By no means uncommon in woodlands.

- 115.—*Euxanthe tiberius*, Smith. Coast hills. This species is never common and is extremely local. It is found only in dense forest. It is a magnificent insect. It generally settles on saplings under the shade of large trees, and its flight is rather slow as a rule.
- 116.—*Charaxes brutus*, Cram. Generally distributed.
- 117.—*Charaxes castor*, Cram. Coast district. Taita, Taveta. Not uncommon. The larva feeds on *Afzelia caunzensis*, which is known to the Swahilis as Bambakofi. The head has four divergent horns and is green, with the horns tipped with red, the outer ones with a yellow stripe on the outside. The body is green with a yellow spiracular stripe and is covered with small yellow tubercles. It has a round greenish-yellow spot with a black centre on the seventh segment, and a similar more irregular spot on the ninth segment, the latter being sometimes obsolete. The pupa is bluish-green with white markings. The egg is spherical with the top slightly concave; it is yellow with a dark brown ring round the top.
- 118.—*Charaxes saturnus*, Butl. Coast district. Taita, Taveta. Not uncommon in some years. The larva is similar to that of *Ch. castor*, but has a smoother appearance, and the large dorsal spots have the centre bluish-green instead of black. The pupa has the white markings much less developed.
- 119.—*Charaxes hansali*, Feld. Taita. Ukambani. I have only taken a few of this rare species.
- 120.—*Charaxes pollux*, Cram. Taita. N. Kikuyu. Not uncommon. The larva is green with a small round rufous spot on the back of the seventh segment, and the tips of the horns are bluish.
- 121.—*Charaxes tavetensis*, Rothschild and Jordan. I have only obtained a single specimen of this rare form which was reared from a larva found at Jilore on the same kind of tree as that of *Ch. castor*. The larva is green with an indistinct triangular mark on the seventh segment, the apex pointing towards the tail. The pupa is dark green with broad bright yellow spots and bands.
- 122.—*Charaxes boueti lasti*, Smith. I have only taken this species in the Coast district, where I have found it fairly common. It is not quite so active as most species of the genus, and females are not so scarce as in some species, e.g., *Ch. etheocles*.
- 123.—*Charaxes azota*, Hew. Coast hills. Taveta. This fine species is rather uncommon. The larva is of the usual *Charaxes* shape. The colour is green, the head being bordered with brown. It has an orange spiracular stripe, the tubercles being more orange and the green of the body has a somewhat mottled appearance which changes before pupation into dull yellow, with a row of large lateral ill-defined brown spots. The dorsal spot on the seventh segment is large and triangular with the apex pointing backward. It is orange brown. The pupa is pinkish with chocolate brown markings.

- 124.—*Charaxes baumanni*, Rogenh. Taita, Taveta. Not generally common.
- 125.—*Charaxes etheocles*, Cram. Taita, Taveta. The males are fairly common, but the females are rare. At Taveta, where it frequented stunted trees growing on the top of a low hill, I obtained a good many. The only female form which I have taken is that known as *kiriki*.
- 126.—*Charaxes guderiana*, Duv. The Coast district. Generally found in forest where it flies high, and is not easily taken.
- 127.—*Charaxes ethalion*, Boisd. Coast hills. Taita, Taveta. The males are less common than those of *Ch. etheocles*, but not rare.
- 128.—*Charaxes violetta*, Smith. Coast district. Taveta. This species appears to be rather rare.
- 129.—*Charaxes cithæron*, Feld. Generally distributed and not uncommon in forest country. The females are found as commonly as the males. In common with all species of the genus they are not easy to capture.
- 130.—*Charaxes bohemani*, Feld. The Coast district. I have only secured two males of this species. This must be near the Northern limit of its range.
- 131.—*Charaxes pythodoris*, Hew. The Coast hills. I have only found it in forest country.
- 132.—*Charaxes jahlnusa*, Trim.—The Coast hills. Taita, Taveta. Not generally common.
- 133.—*Charaxes candiope*, Godart. Generally distributed and commoner than most species of the genus.
- 134.—*Charaxes varanes*, Cram. Generally common.
- 135.—*Charaxes zoolina*, Doubl. and Hew. Widely distributed. Both the *zoolina* and the *neanthes* forms occur. The former was particularly abundant in Taita and Taveta in 1905.
- 136.—*Charaxes eupale*, Drury. A single specimen at about 6000 ft. on the S.W. of Kenia. It seems very rare to the East of the Rift Valley.
- 137.—*Libythea laius*, Butl. The Coast district. This species is very uncertain in its appearance, and sometimes is not seen for years. I have already recorded its capture on migration.
- 138.—*Alæna picata*, Sharpe. Coast hills. I have found the species rare. The female is like a small *Neptis*, and the male bears a general resemblance to a small *Acræa*.
- 139.—*Telipna rogersi*, Druce. Coast hills. A very local butterfly, sometimes fairly common where it is found.
- 140.—*Pentila amenaida*, Hew. The Coast district. This common species is very variable, and the number and size of the black spots is very inconstant.
- 141.—*Pentila peucetia*, Hew. Coast hills, Taita, Ukambani. I have taken this in some numbers. It is always found in woodlands.

- 184.—*Lycænesthes princeps*, Butl. Taita, Taveta, N. Kikuyu. This does not seem to be common, but possibly it has been overlooked.
- 185.—*Lycænesthes lasti*, Smith and Kirby. Coast hills, Taveta. Not uncommon.
- 186.—*Lycænesthes definita*, Butl. Taita, Kikuyu. This species is often abundant.
- 187.—*Lycænesthes larydas*, Cram. Common generally.
- 188.—*Lycænesthes liodes*, Hew. Coast hills, Taveta. Apparently rare but probably it has been overlooked.
- 189.—*Lycænesthes indefinita*, Bethune-Baker. I believe this occurs freely at Nairobi in the forests.
- 190.—*Phylaria cyara*, Hew. One specimen in N. Kikuyu.
- 191.—*Uranothauma heritsia*, Hew. Taita, Kikuyu. The species is common.
- 192.—*Uranothauma cordatus*, Sharpe. Kikuyu. The males occur in some abundance in damp places, especially at Rijabe. I have not taken the female.
- 193.—*Uranothauma nubifer*, Trim. Taita, Kikuyu. Not so abundant as the preceding.
- 194.—*Uranothauma falkensteini*, Duv. Taita, Taveta, Kikuyu. The most abundant of the genus. The females frequent flowers and the males often swarm on damp ground near rivers. The specimens in Kikuyu are larger and more flushed with purple.
- 195.—*Cacyreus lingeus*, Cram. Ubiquitous.
- 196.—*Cacyreus palemon*, Cram. Taita, Kikuyu. Common above 5,000 feet.
- 197.—*Castalius melæna*, Trim. Coast district, Taveta. Not uncommon.
- 198.—*Castalius gregorii*, Butl. Taveta, Kikuyu. This species does not seem common.
- 199.—*Castalius margaritaceus*, Sharpe. North and South Kikuyu. Common. I once found it in great abundance in Kenia forest.
- 200.—*Tarucus louisæ*, Sharpe. Taita, Taveta. This species does not appear to be common, but it is very inconspicuous and liable to be overlooked.
- 201.—*Tarucus telicanus*, Lang. Ubiquitous. I have found the larva feeding on the flowers of *Plumbago capensis* without any attendant ants.
- 202.—*Azanus sigillatus*, Butl.
- 203.—*Azanus moriqua*, Wallgr.
- 204.—*Azanus mirza*, Plotz.
- 205.—*Azanus jesous*, Guer.
- All these species occur commonly and may sometimes be found in large numbers on damp sand in river beds.
- 206.—*Nacaduba sichela*, Wallgr. Generally distributed, but not usually very common.
- 207.—*Polyommatus bæticus*, Linn. Ubiquitous.

- 208.—*Cyclirius sharpix*, Butl. Kikuyu. Common on swampy ground above 7,000 feet.
- 209.—*Scolitantides crawshayi*, Butl. Kenia. Probably not uncommon.
- 210.—*Catochrysops malathana*, Boisd. Ubiquitous.
- 211.—*Catochrysops dolorosus*, Trim. Kikuyu. Very common near Nairobi. It is probably often overlooked.
- 212.—*Catochrysops osiris*, Hopff. Common generally.
- 213.—*Catochrysops barkeri*, Trim. Coast district. Not uncommon.
- 214.—*Catochrysops celæus*, Cram. One specimen from Kenia which is probably this species.
- 215.—*Catochrysops peculiaris*, Rogenh. Widely distributed but not generally common. I have met with it more frequently at Mombasa than elsewhere.
- 216.—*Chilades trochilus*, Meyer. Occurs everywhere.
- 217.—*Chilades mahallakoana*, Wallgr.—Two specimens from the Thika River on the Fort Hall Road.
- 218.—*Everes hippocrates*, Fabr. Coast district, Taita, Taveta. Not uncommon.
- 219.—*Everes micyclus*, Cram. Coast district. Rather a local species generally found near streams.
- 220.—*Cupidopsis cissus*, Godart. North and South Kikuyu. Not very common.
- 221.—*Cupidopsis jobates*, Hopff. Common generally, especially at Taveta.
- 222.—*Zizeeria gaika*, Trim. Ubiquitous.
- 223.—*Zizeeria lysimon*, Hübn. Ubiquitous.
- 224.—*Zizeeria lucida*, Trim. Common generally but not so abundant as the two preceding.
- 225.—*Zizeeria antanossa*, Mab. Generally distributed but apparently not common. It probably only wants looking for.
- 226.—*Zizeeria stellata*, Trim. Kikuyu. Fairly common at high elevations.
- 227.—*Chrysophanus abboti*, Holl. Ukambani, Kikuyu. Not uncommon. Except for its copper hind wings, this species resembles the British "Small Copper."
- 228.—*Leptosia medusa*, Cram. Common in forests.
- 229.—*Herpænia eriphea*, Godart. Common generally.
- 230.—*Mylothris agathina*, Cram. Ubiquitous.
- 231.—*Mylothris ruppelli*, Koch. Common except in the Coast district.
- 232.—*Mylothris rubricosta*, Mab. Kikuyu. Common especially in Papyrus swamps.
- 233.—*Mylothris narcissus*, Butl. Taita. Not uncommon.
- 234.—*Mylothris jacksoni*, Sharpe. Kikuyu. The amount of fuscous in the fore-wing is very variable. Specimens captured on the same day vary from

a fore-wing completely fuscous except for the veins, to a fore-wing white with a fuscous border all round the wing. I somewhat doubt the validity of *Mylothris neumanni*.

- 235.—*Phrissura phæbe*, Butl. Common at Nairobi, and also occurs in the Coast hills.
- 236.—*Phrissura isokani*, Smith.—Coast district. Not common.
- 237.—*Phrissura lasti*, Smith. Coast district. By no means uncommon, chiefly in forest.
- 238.—*Glutophrissa epaphia*, Cram. Generally very common.
- 239.—*Belenois margaritacea*, Sharpe. Taita, Kikuyu. Above 4000 ft. Not very common generally, but I have taken it in some abundance in Taita during the hot weather. It is more confined to woodlands than most species of the genus.
- 240.—*Belenois gidica*, Godart. Common everywhere.
- 241.—*Belenois severina*, Cram. Ubiquitous.
- 242.—*Belenois mesentina*, Cram. Abundant everywhere.
- 243.—*Belenois zochalia*, Boisd. Generally distributed, except in the Coast district.
- 244.—*Belenois thysa*, Hopff. Generally common.
- 245.—*Pinacopteryx spilleri*, Staud. Coast district, Taita. Not uncommon.
- 246.—*Pinacopteryx pigea*, Boisd. Taita, North and South Kikuyu. The females of this species appear to be dimorphic and mimic *Mylothris agathina* and *M. narcissus*.
- 247.—*Pinacopteryx vidua*, Butler. Taita. Sometimes found commonly near the Voi River.
- 248.—*Pinacopteryx liliana*, Gr. Smith. Coast district, Taita, Taveta, Ukambani. A common species, which is rather variable.
- 249.—*Synchlœ johnstoni*, Crowl. Taita, Ukambani, Kikuyu. Often abundant, especially at Nairobi.
- 250.—*Teracolus amatus*, Fabr. Generally common.
- 251.—*Teracolus phisidia rothschildi*, Sharpe. I have only taken this right on the sea coast, where it is often common.
- 252.—*Teracolus castalis*, Staud. Coast district, Taita, Taveta. Not uncommon, especially near the Voi River.
- 253.—*Teracolus aurigineus*, Butl. Taita, Taveta, Kikuyu. Generally common in dry places.
- 254.—*Teracolus vesta*, Reiche. This is also a common species of wide distribution.
- 255.—*Teracolus halimede*, Klug. Taita, Taveta. Common.
- 256.—*Teracolus protomedia*, Klug. Coast hills, Taita. I have not found this fine species common, but it is of more frequent occurrence in North Giryama than elsewhere.

- 257.—*Teracolus celimene*, Lucas. Taita, Taveta, Ukambani. I have not met with this commonly.
- 258.—*Teracolus eris*, Klug. This is another widely distributed species. It is not uncommon. Its flight is generally rapid.
- 259.—*Teracolus phlegyas*, Butl. Coast district, Taita, Taveta. This is a common species. Together with other species of this genus and also the common species of *Belenois*, it resorts to the same places for considerable periods to rest for the night. These places are generally exposed to the rays of the Western sun.
- 260.—*Teracolus bacchus*, Butl. Taveta, Ukambani. This seems uncommon, but it is doubtful whether it is really distinct from the preceding
- 261.—*Teracolus regina*, Trim. Coast district, Taita, Taveta. Rather irregular in its comparative abundance. I have found it commoner at Rabai than elsewhere.
- 262.—*Teracolus hetæra*, Gerst. Coast hills, Taita, Taveta, South Kikuyu, Ukambani. Fairly common generally.
- 263.—*Teracolus puniceus*, Butl. Coast hills, Taita. Doubtfully distinct from the preceding. The yellow females, which are apt to occur sporadically in most species of the genus, seem to be of more frequent occurrence in these two species.
- 264.—*Teracolus elgonensis*, Sharpe. North and South Kikuyu. Sometimes found in some numbers. Its habits are very different from those of the genus generally as it frequents forest and flies rather high. All my captures differ from the type in almost totally wanting the broad black of the apex.
- 265.—*Teracolus callidia*, Smith. Taita, Taveta. Fairly common.
- 266.—*Teracolus eupompe*, Klug. Generally abundant.
- 267.—*Teracolus omphale*, Godart. Ubiquitous.
- 268.—*Teracolus दौरα*, Klug. Coast district, Taita, Taveta. This species is fairly common, but it may easily be overlooked from its resemblance to *T. omphale*. All my captures are of the wet phase. *
- 269.—*Teracolus achine*, Cram. Ubiquitous.
- 270.—*Teracolus casta*, Gerst. Coast hills, Taita, Taveta. Not common at the Coast, but abundant at Taveta.
- 271.—*Teracolus antigone*, Boisd. Ubiquitous.
- 272.—*Teracolus evarne*, Klug. Ubiquitous.
- 273.—*Teracolus incretus*, Butl. Generally abundant.
- 274.—*Eronia cleodora*, Hübn. Coast district, Taita, Taveta. A common species in woodlands and forest.
- 275.—*Eronia leda*, Boisd. This is found in the same districts as the preceding species.
- 276.—*Leuceronia argia*, Fabr. This is common in the woodlands of the coast belt, but I have seldom met with it elsewhere.

- 277.—*Leuceronia thalassina*, Boisd. Coast hills. Not common at Rabai, but I have met with it in some abundance in Giriama country.
- 278.—*Leuceronia buqueti*, Boisd. Common generally.
- 279.—*Catopsilia florella*, Fabr. Abundant everywhere.
- 280.—*Terias senegalensis*, Boisd. Abundant everywhere.
- 281.—*Terias regularis*, Butl. This seems common generally.
- 282.—*Terias brigitta*, Cram. Ubiquitous.
- 283.—*Colias electra*, Linn. Common above 4000 ft. The white female occurs freely.
- 284.—*Papilio nobilis*, Rogenh. South Kikuyu. Not uncommon. Generally flies high in forests.

(To be concluded).

Reprinted from "The Entomologist's Monthly Magazine," 2nd Series, Vol. xxiv.

A LIST OF BUTTERFLIES COLLECTED DURING THE LAST TEN
YEARS IN BRITISH EAST AFRICA (*concluded.*)

BY THE REV. K. ST. AUBYN ROGERS, F.E.S.

- 285.—*Papilio dardanus*, Brown.—I have found this everywhere except in North Kikuyu and Kenia. At Nairobi a great number of the female forms occur.
- 286.—*Papilio echerioides*, Trim. Taita, Taveta, Kikuyu. Not common usually. It is more plentiful at Nairobi than elsewhere.
- 287.—*Papilio jacksoni*, Sharpe. South Kikuyu. I have sometimes found this abundant at Kijabe.
- 288.—*Papilio constantinus*, Ward. Coast district, Taita, Taveta. By no means uncommon in forests, especially in the Coast hills.
- 289.—*Papilio mackinnoni*, Sharpe. Kikuyu. Common in forests.
- 290.—*Papilio phorcas*, Cram. Common in the forests of Kikuyu.
- 291.—*Papilio nireus*, Linn. Common generally in forests.
- 292.—*Papilio bromius*, Doubl. Taita, Kikuyu. Not uncommon in forests above 5000 ft. Like many other swallowtails it is partial to wet mud.
- 293.—*Papilio demodocus*, Esper. Ubiquitous.
- 294.—*Papilio ophidicephalus*, Oberth. Widely distributed in forests. Its flight is very lofty and irregular, so that its capture is always difficult.
- 295.—*Papilio angolanus*, Gœze. This is a common species generally.
- 296.—*Papilio philonoe*, Ward. Common in the Coast hills.
- 297.—*Papilio leonidas*, Fabr. Common generally.
- 298.—*Papilio antheus*, Cram. Coast hills, Taita. Often occurs in the Coast district in some abundance, especially at the beginning of the wet season.
- 299.—*Papilio polices*, Cram. Widely distributed and not uncommon where the country is suitable.

- 300.—*Papilio porthaon*, Hew. Not uncommon in the Coast district.
- 301.—*Papilio colonna*, Ward. Coast hills, Taita. This is generally the commoner of the group in the Coast hills.
- 302.—*Papilio sisenna*, Mab. Coast hills. Not common. It looks like *P. colonna* on the wing.
- 303.—*Papilio kirbyi*, Hew. Coast hills. This is also not a common species.
- 304.—*Sarangesa djælælæ*, Wallgr. Taita, Nairobi, Ukambani. This seems to be a common species.
- 305.—*Sarangesa lugens*, Rogen. North and South Kikuyu. This is also common, but is found at greater elevations than the preceding.
- 306.—*Sarangesa motozi*, Wallgr. Generally common.
- 307.—*Sarangesa eliminata*, Holl. Taita, Taveta, Kikuyu. Very abundant at Taveta.
- 308.—*Celænorrhinus galenus*, Fabr. Coast district, Taita, Taveta. Not generally common.
- 309.—*Celænorrhinus bettini*, Butl. One specimen from Nairobi.
- 310.—*Tagiades fesus*, Fabr. A common species in the Coast district where there are any trees.
- 311.—*Eagris nottoana*, Wallgr. I have taken a few of this species at Rabai.
- 312.—*Eagris phyllophila*, Trim. Coast district. By no means common.
- 313.—*Eagris plicata*, Butl. Taita, Taveta, Kikuyu. This is usually common.
- 314.—*Eagris ochreana*, Lathy. Taita. Doubtfully distinct from the preceding.
- 315.—*Caprona pillana*, Wallgr. Coast district, Taveta. I have found this but rarely.
- 316.—*Caprona canopus*, Trim. This seems to occur nearly everywhere, but is not usually common.
- 317.—*Hesperia spio*, Linn.
- 318.—*Hesperia machakosa*, Butl.
- 319.—*Hesperia dromus*, Ploetz.

These species resemble one another very closely and are not easy to differentiate. They occur fairly commonly in most places.

- 320.—*Hesperia sataspes*, Trim. Coast district. This is not very common.
- 321.—*Carcharodus elma*, Trim. Generally distributed and usually common.
- 322.—*Abantis tettensis*, Hopff. Taveta. I took this in some numbers when I was at Taveta.
- 323.—*Abantis paradisea*, Butl. Widely distributed, but I have never found it at all common.
- 324.—*Abantis venosa*, Trim. I captured a single specimen near Kaya Kauma in the Coast hills some years ago, but I have not met with it again.

- 325.—*Abantis levubu*, Wallgr. Taveta. Not uncommon. It bears some resemblance to *Belenois mesentina* when settled in its usual position with wings half raised, but its flight is much more rapid.
- 326.—*Acleros mackenii*, Trim. Taveta. Common.
- 327.—*Acleros placidus*, Ploetz. Common generally.
- 328.—*Acleros olaus*, Ploetz. One or two of my specimens from Rabai have been identified as belonging to this species.
- 329.—*Gorgyra johnstoni*, Butl.
- 330.—*Gorgyra minima*, Holl.

These two species are not uncommon in the Coast district.

- 331.—*Parosmodes morantii*, Trim. Coast district, Taveta. Not uncommon.
- 332.—*Parosmodes icterica*, Mab. Abundant in woods in the Coast district.
- 333.—*Parosmodes numa*, Druce. One specimen at Rabai.
- 334.—*Cyclopides metis*, Linn. Taita, Kikuyu. This is a very variable species and is fairly common.
- 335.—*Cyclopides quadrisignatus*, Butl. Kikuyu. Not uncommon.
- 336.—*Cyclopides midas*, Butl. Kikuyu. This also is not uncommon.
- 337.—*Cyclopides stellata*, Mab. Coast district. A common species.
- 338.—*Kedestes rogersi*, Druce. Taveta, Masongaleni. I have not met with this commonly.
- 339.—*Kedestes capenas*, Hew. Common in the Coast district.
- 340.—*Kedestes callides*, Hew. I have received one specimen from Masongaleni.
- 341.—*Kedestes wallengreni*, Trim. Coast district. Ukambani. Not common.
- 342.—*Gegenes nostrodamus*, Fabr. A specimen from Mombasa has been identified as belonging to this Palearctic species.
- 343.—*Gegenes letterstedti*, Wallgr. Taita, Kikuyu. This is generally abundant when it is found.
- 344.—*Padraona zeno*, Trim. Taita, Kikuyu. Another common species.
- 345.—*Chapra mathias*, Fabr. Ubiquitous.
- 346.—*Parnara detecta*, Trim. Coast district. Common.
- 347.—*Parnara micans*, Holl. Coast hills. Taita, N. Kikuyu. Not generally common.
- 348.—*Parnara subochracea*, Holl. Coast district. I believe this is not uncommon.
- 349.—*Baoris lugens*, Hopff. Common in the Coast district.
- 350.—*Baoris maranga*, Butl. Kikuyu. Very near the last species.
- 351.—*Baoris nyassæ*, Hew. Coast district. I have found this peculiar species with its *Acraea*-like underside distinctly rare.
- 352.—*Pardaleodes incertas*, Snellen. Coast district. By no means common.

- 353.—*Acromesis neander*, Ploetz. The Coast district. It is not very common usually, but I have more than once observed it migrating in very large numbers in April at the break of the rains.
- 354.—*Andronymus philander*, Hopff. Coast district. This does not appear to be very common.
- 355.—*Cænides cylinda*, Hew. The Coast district. Distinctly crepuscular in its habits. It may often be seen during the day time resting on the walls of a house under the verandah, and when disturbed, it only flies a short way so that its capture is easy.
- 356.—*Orses telisignata*, Butl. Abundant in the bamboo jungle on Kinangop.
- 357.—*Ploetzia cirmica*, Hew. I have taken this in the Coast district, but not commonly. It is crepuscular or even nocturnal in its habits as it sometimes comes to light.
- 358.—*Zophopetes drysemiphila*, Trim. One specimen at Taveta.
- 359.—*Rhopalocampta libeon*, Druce. A few at Nairobi settled on damp mud in the forest.
- 360.—*Rhopalocampta anchises*, Gerst. Coast district. Not uncommon.
- 361.—*Rhopalocampta forestan*, Cram. Generally abundant.
- 362.—*Rhopalocampta pisistratus*, Fabr. Coast district. Taita, Taveta. Not uncommon.
- 363.—*Rhopalocampta keithloa*, Wallgr. Common in the evenings on low lying ground near the Coast. The larva is very conspicuous, and feeds perfectly exposed.
- 364.—*Rhopalocampta sejuncta*, Mab. The Coast district. Not uncommon.
- 365.—*Rhopalocampta chalybe*, Westw. I took two specimens of this beautiful species in the forests of Taveta.

January, 1913.

XXIII. *South African Aculeate Hymenoptera in the Oxford Museum.* By the late COL. C. T. BINGHAM, F.Z.S. With Introduction by PROF. E. B. POULTON, D.Sc., M.A., F.R.S.

[Read May 3rd, 1911.]

THE Hope Department having in recent years received many accessions to its collection of South African *Hymenoptera Aculeata*, I asked my friend the late Col. C. T. Bingham if he would work out the material, preparing a list and describing the new forms. He agreed with me that such a memoir would be of value to the students of African insects, and he consented to undertake it in the intervals of other work. I brought the whole of the material to the Natural History Museum and, from time to time during the last few years of his life, he devoted himself to its study. He often showed me the parts of the collection he had worked out and the gradually increasing pile of manuscript. What Col. Bingham had accomplished at the time of his lamented death is now given to the world in the following paper, which also includes the description of a new South African Aculeate from the collections made in 1905 by Dr. F. A. Dixey and Dr. G. B. Longstaff, and submitted to the author by the naturalist last named.

The source of each of the examples studied by Col. Bingham is clearly indicated in the paper, but I may mention that, in addition to the South African examples in the W. W. Saunders Collection, the following recently-made collections were submitted to the author: the specimens collected by Mr. S. A. Neave in Northern Rhodesia; by Mr. Guy A. K. Marshall in S. Rhodesia, chiefly the Salisbury District; by Dr. F. N. Brown in the Orange River Colony and Natal; by Mr. G. F. Leigh and Mr. F. Muir in Natal.

The types of all the descriptions are in the Hope Department of the Oxford University Museum.

In presenting the labours of the lamented naturalist to the Society, I have acted throughout under the skilled advice of his friend and fellow-worker Mr. Rowland E. Turner.

E. B. POULTON.

FOSSORES.

Family MUTILLIDAE.

1. MUTILLA ATROPOS, Smith.

Mutilla atropos, Sm., Cat. Hym. B.M., iii, 1855, p. 22 ♂; André, Zeit. Hym. Dipt., iii, 1903, p. 235.

Mutilla albistyla, Sauss., in Dist., Naturalist in the Transvaal, 1892, p. 25, pl. 4, fig. 7 ♂.

Mutilla artemisia, Pér., Ann. S.A. Mus., i, 1899, p. 368.

NATAL ♂ (*Coll. W. W. Saunders*). RHODESIA: Mashonaland, Salisbury 5000 ft. ♂ (*G. Marshall*); Loangwa District, Petauké 1700–2400 ft. ♂ (*S. A. Neave*). Originally described from Natal. Type in the British Museum, also other specimens from Lake Ngami and from Angola.

2. MUTILLA MINOS, Smith.

Mutilla minos, Sm., Cat. Hym. B.M., iii, 1855, p. 16 ♂.

RHODESIA: Mashonaland, Salisbury 5000 ft. ♂ (*G. Marshall*); Loangwa District, Petauké 1700–2400 ft. ♂, Fort Jameson 3000 ft. ♂ (*S. A. Neave*).

3. MUTILLA PURPURATA, Smith.

Mutilla purpurata, Sm., Descr. New sp. Hym. B.M., 1879, p. 190 ♂; Pér., Ann. S.A. Mus., i, pt. i, 1898, p. 60 ♀ and pt. ii, 1899, pl. 8, figs. 6, 14 ♀ ♂; André, Zeit. Hym. Dipt., ii, 1902, p. 33.

RHODESIA: Mashonaland, Salisbury 5000 ft. ♂ (*G. Marshall*). Originally described from Natal. Type ♂ in B.M., also other specimens from Natal and B.E. Africa. Type ♀ in S.A. Museum, Cape Town.

4. MUTILLA PSAMMATHE, Péringuey.

Mutilla psammathe, Pér., Ann. S.A. Mus., i, pt. 2, 1899, p. 356 ♂ ♀.

NATAL ♂ ♀ in cop. (*F. Muir*). Types in S.A. Mus. from Zambesia (*G. Marshall*).

5. MUTILLA CHARAXUS, Smith.

Mutilla charaxus, Sm., Cat. Hym. B.M., iii, 1855, p. 17 ♂

S. AFRICA ♂ (*Coll. W. W. Saunders*). RHODESIA : Mashonaland, Salisbury 5000 ft. ♂, Buluwayo ♂ ♀ in cop. Dec. 1903 (*G. Marshall*).

♀. Head and abdomen black, thorax dark red. Head, thorax, and abdomen covered with erect black hairs. Head about as broad as the thorax anteriorly, covered with coarse, somewhat greyish pile, beneath which it is closely punctured ; mandibles acute at tip with a small preapical tooth on their inner margins ; antennae opaque, the scape covered with pile similar to that on the front and vertex, 1st joint of the flagellum very short, 2nd twice as long as the 3rd ; eyes oval, rather small, equidistant from the occiput and the base of the mandibles. Thorax : strongly punctured above, the sides excavate and smooth. Seen from above, the thorax is narrow and rounded anteriorly, emarginate at the sides and distinctly broadened posteriorly ; the dorsal surface convex, passing evenly and roundly into the posterior vertical face, which is slightly concave in the centre ; legs black, covered with whitish hairs ; the calcaria and the single row of spines on the intermediate and posterior tibiae white ; claws simple, pale reddish-brown. Abdomen somewhat densely covered with short black pile, beneath which it is closely punctured ; 1st segment immaculate beneath, longitudinally carinate, with a single somewhat deep emargination in the middle, 2nd segment with two rounded pubescent spots side by side placed closer to the base than to the apex of the segment, the lateral edges of the dorsal plate with a short longitudinal line of red ; 3rd segment with a transverse band of dense white pubescence broadly interrupted in the middle, apex of the dorsal and the apices of the 2nd to the 5th ventral segments conspicuously fringed with white hairs, pygidial area clearly defined, flat and finely punctured.

Length ♀ 8 mm.

Described from the single ♀ taken in cop. at Buluwayo by Mr. G. A. K. Marshall.

From the ♀ of *M. leucopyga*, it can be distinguished by the shape of the thorax, which in *leucopyga* has the sides parallel, and by the proportion of the joints of the flagellum of the antennae.

6. *MUTILLA MEDON*, Smith.

Mutilla medon, Sm., Cat. Hym. B.M., iii, 1855, p. 20 ♂ ;
Sich. and Radoszk., Hor. Soc. Ent. Ross., vi, 1869,
p. 239, pl. 21, fig. 12 ♂.

NATAL: Durban ♂ ♀ in cop. (*G. F. Leigh*). RHODESIA: Mashonaland, Salisbury ♂ ♀ in cop. Nov. 19, 1905 (*G. Marshall*); Loangwa District, Petauké 1700–2400 ft. ♂ (*S. A. Neave*). Type in B.M. from the Congo, also other specimens from Natal and from Beira in Portuguese East Africa.

♀. Head and abdomen black, thorax red. Head, thorax and abdomen covered with short erect black hairs, sparse on the head and abdomen, somewhat more thickly set on the thorax. Head slightly broader than the thorax anteriorly, closely punctured; mandibles acute with a preapical short, blunt tooth on their inner edges; antennae opaque, the scape closely set with short pale pubescence; antennal tubercles red; 2nd joint of the flagellum incrassate towards the apex, twice as long as the 3rd, 3rd and 4th subequal; eyes oval, placed equidistant from the base of the mandibles and the occiput. Thorax rectangular, slightly convex above, rounded anteriorly, the pronotal lateral angles not prominent, sides slightly emarginate, posterior face vertical. Seen from above the thorax is not broader anteriorly than posteriorly; legs black covered with whitish hairs, the single row of spines on the intermediate and posterior tibiae and the calcaria white. Abdomen finely punctured, the punctures shallow; 1st segment immaculate, longitudinally carinate below, the carina terminating posteriorly in a vertical tooth; 2nd segment with two pubescent white spots side by side above; 3rd and 4th segments with pubescent white bands above, both bands broadly interrupted in the middle; apex of 5th segment above and apices of 2nd to 5th ventral segments fringed with long white hairs, those fringing the 5th dorsal segment falling over and completely shading a well-defined, flat and longitudinally striate pygidial area.

Length ♀ 8–13 mm.

NOTE.—The ♀ taken in cop. at Salisbury, Nov. 19, 1905, by Mr. Marshall, had been placed at the head of the series by Col. Bingham, and has been considered as the type of the above description of this sex.—E. B. P.

7. *MUTILLA PREDATRIX*, Smith.

Mutilla predatrix, Sm., Descr. New sp. Hym. B.M., 1879, p. 191 ♀.

NATAL ♀ (*Coll. W. W. Saunders*). RHODESIA: Mashonaland, Salisbury 5000 ft. ♀, Umtali 3700 ft. ♀ (*G. Marshall*). Type in the B.M. from Natal, also other specimens from Delagoa Bay and Zululand.

8. *MUTILLA DECIPIENS*, Smith.

Mutilla decipiens, Sm., Descr. New sp. Hym. B.M., 1879
p. 194 ♀.

NATAL ♀ (*Coll. W. W. Saunders*). Type in B.M., also
other specimens from Natal.

9. *MUTILLA SPECULATRIX*, Smith.

Mutilla speculatrix, Sm., Descr. New sp. Hym. B.M., 1879,
p. 194 ♀; Pér., Ann. S.A. Mus., i, pt. 1, 1898, p. 88 ♂.

NATAL ♀ (*Coll. W. W. Saunders*). Type in B.M., also
other specimens from Natal. A single ♀ in B.M. from
S. Nigeria (*D. A. MacAlister*).

10. *MUTILLA SINUOSICEPS*, André.

Mutilla sinuosiceps, André, Zeits. Hym. Dipt., ii, 1902,
p. 27 ♂.

RHODESIA : Mashonaland, Salisbury 5000 ft. ♂ (*G. Marshall*).

11. *MUTILLA ARGENTEIVENTRIS*, André.

Mutilla argenteiventris, André, Zeits. Hym. Dipt., ii, 1902,
p. 25 ♂.

RHODESIA : Mashonaland, Salisbury 5000 ft. ♂ (*G. Marshall*).

12. *MUTILLA PÉRINGUEYI*, André.

Mutilla péringueyi, André, Zeits. Hym. Dipt., ii, pt. 1,
1902, p. 25 ♂.

Estcourt: NATAL 4000 ft. ♂ ♀ in cop. Jan. 1897
(*G. Marshall*).

♀. Black, the mandibles anteriorly in the middle, the antennal
tubercles, the apex of the scape of the antennae and the thorax
above and on the sides red; head, thorax and abdomen covered with
erect black hairs, the abdomen with close-set recumbent short black
pubescence, and apical white pubescent bands on the basal three
segments, the bands on the 2nd and 3rd segments medially widely
interrupted. Head not wider than the thorax in front, transversely
rectangular convex in front, very slightly arched posteriorly, finely
and closely punctured; mandibles acutely pointed with a small

preapical tooth on their inner edges; clypeus rounded anteriorly, flat with a small shining tubercle at base. Antennae: 2nd joint of the flagellum twice as long as the 3rd, 3rd and 4th subequal; eye rounded, convex, the vertex arched, the sides of the head behind the eyes well developed. Thorax elongate, broader anteriorly than posteriorly, the sides slightly crenulate, above closely and coarsely punctured, the punctures running into longitudinal striae or fine grooves, posteriorly obliquely sloped; the sides of the median segment carinate; the pleurae smooth, legs shining, intermediate and posterior tibiae with a single row of short distant spines; calcaria short, yellowish-white. Abdomen sessile, ventral carina of the basal segment feebly emarginate as in the ♂; 6th segment convex without a pygidial area.

Length ♀ 8 mm.

13. *MUTILLA ALECTO*, Smith.

Mutilla alecto, Sm., Cat. Hym. B.M., iii, 1855, p. 17 ♂; André, Wytsman's Gen. Ins. Hym., Fasc. 11, 1903, p. 35.

GUINEA ♂ (*Coll. W. W. Saunders*). Natal ? ♂ (*Coll. W. W. Saunders*).

14. *MUTILLA LEUCOPYGA*, Klug.

Mutilla leucopyga, Klug, Symb. Phys., 1829, dec. 1, pl. 4, fig. 10 ♀; André, Zeits. Hym. Dipt., ii, pt. 1, 1902, p. 22.

Mutilla opaca, Lep., Hist. Nat. Hym., iii, 1845, p. 624 ♂.

Mutilla persephone, Pér., Ann. S.A. Mus., i, 1898, p. 69; id. tom. cit. 1899, pl. 8, figs. 11, 13 ♀ ♂.

NATAL ♀ (*Coll. W. W. Saunders*). RHODESIA: Mashonaland, Salisbury 5000 ft., and Buluwayo ♀ ♀ (*G. Marshall*).

15. *MUTILLA CYTHERIS*, Péringuey.

Mutilla cytheris, Pér., Ann. S.A. Mus., i, pt. 2, 1899, p. 372 ♂.

RHODESIA: Mashonaland, Salisbury 5000 ft. ♂ (*G. Marshall*).

The two succeeding forms have, so far as I can make out, not been previously described. Both so closely resemble *Dolichomutilla guineensis*, Fabr., that they might easily be mistaken for that form; both belong, however,

to the genus *Mutilla* and not to *Dolichomutilla*, Ashmead, as defined by André (*Genera Insectorum. P. Wytsman. Hymenoptera*).

16. *MUTILLA SECRETATA*, form n.

N. E. RHODESIA: Loangwa River 1700 ft.: June 7, 1905; and Petauké, Nov. 27, 1905 (*S. A. Neave*).

♀. Black shining with sparsely scattered erect white hairs, the abdomen more densely clothed with recumbent black hairs. Head subquadrate closely and coarsely punctured, as wide as the thorax in front; clypeus overhung with a dense fringe of white hairs; mandibles acute, slightly reddish in the middle; eyes ovate, large, closer above to the occiput than below to the base of the mandibles; head behind the eyes rounded and broad. Thorax rectangular, the sides nearly parallel, the pronotum slightly arched anteriorly, the median segment obliquely but steeply sloped posteriorly, the whole thorax above very closely and coarsely punctured; seen from above the intervals between the punctures on the median segment have the appearance of an arched row of short spines, the sides of the thorax nearly smooth with one or two wide reticulations on the mesopleurae, the mesopleurae obliquely bicarinate; legs slender, intermediate and posterior tibiae with a double row of short black spines, the calcaria white. Abdomen sessile; basal segment short immaculate, ventral carina incised in the middle; 2nd segment with two transversely placed pubescent round white spots; 3rd and 4th segments with broad pubescent white bands, that are widely interrupted in the middle on both segments; 6th segment fringed and overhung with white hairs, convex and smooth towards apex with no defined pygidial area, below with a single small median tubercle; 2nd and following ventral segments narrowly testaceous at their apices and sparsely fringed with white hairs.

Length ♀ 10-11 mm.

The specimen from the Loangwa River, June 7, 1905, is marked as the type.

17. *MUTILLA DURA*, form n.

RHODESIA: Loangwa Valley, Petauké 1700 ft.: Dec. 25, 1905 (*S. A. Neave*).

♀. In general appearance size and markings very closely resembles *M. secreta*, the form just described. It can be distinguished as follows. Antennae: 2nd joint of the flagellum three times, not twice

as long as the 3rd ; thorax : broader posteriorly than anteriorly ; abdomen : basal joint slightly longer, its ventral carina *twice* incised ; 3rd segment only with a pubescent interrupted white band above ; 4th segment entirely black ; pygidial area flat, well defined and punctured, no tubercle on ventral valve of 6th segment.

Length ♀ 11 mm.

Described from a single specimen.

18. *MUTILLA IPHIANASSA*, form n.

RHODESIA : East Loangwa District, Petauké 2400 ft. : April 1, 1905 (*S. A. Neave*).

♀. Black ; mandibles at apex, the antennal tubercles and the thorax above a very dark obscure red, this colour on the thorax not extended to the anterior or posterior margins, but leaving an edging of black which is broadest on the median segment. Head and thorax above densely, the abdomen more sparsely clothed with erect brownish hairs ; the abdomen with a thin scattered covering also of recumbent black hairs. Head closely and finely punctured, subquadrate slightly broader than long and slightly broader than the thorax anteriorly ; mandibles acute ; eyes ovate closer to the base of the mandibles below than to the occiput above ; antennae : scape shining with a few scattered brown hairs, flagellum opaque, basal two joints minutely but densely pubescent, 1st joint very short, 2nd twice as long as 3rd or 4th. Thorax nearly rectangular, coarsely cribrately punctured, very slightly broader posteriorly than anteriorly, arched in front, the sides dentate in the middle, behind which they are slightly emarginate, posteriorly the dorsal surface passes with an even but steep slope to the apex of the median segment ; legs short, slender, tibiae of the intermediate and posterior pair of legs with a single row of spines, calcaria very slender, short and white. Abdomen : massive, sessile, finely punctured and shining ; 1st segment immaculate, ventral carina thick and deep, strongly incised in the middle ; 2nd segment with a triangular spot in the middle at base and a slender medially widely interrupted line of yellowish pubescence on its apical margin above ; 3rd segment with a broad similarly interrupted band of like pubescence above ; 6th segment shaded by a tuft of long yellowish hairs which hides the comparatively well-defined but small flat transversely striate pygidial area ; abdomen beneath covered rather densely with soft reddish-brown hairs.

Length ♀ 8-9 mm.

Described from a single example.

This form has a superficial resemblance to *M. alcyone*, Péringuey (suspected by Péringuey to be the ♀ of *M. exaltata*, Smith) in the red-colouring of the thorax which is confined to the dorsal face. In *alcyone*, however, the basal abdominal segment has an apical whitish patch, the 2nd segment a spot or ovate patch in the centre, and the 3rd and 4th segments similarly coloured bands. In addition, the shape of the head and the ventral carina on the basal abdominal segment are quite different.

19. *MUTILLA CRISTATA*, form n.

RHODESIA: Mashonaland, Salisbury 5000 ft.: Nov. 1903 (*G. Marshall*).

♂. Totally black and covered with a sparse clothing of erect white hairs which on the abdomen form slight but distinct fringes to the apical margins of the segments; on the legs the white hairs are rather more dense especially on the outside of the tibiae of the intermediate and posterior legs, the calcaria of which are also white; wings hyaline at base then gradually infusate and on the forewings with a sharply marked broad terminal fuscous margin that has in certain lights a rich purple effulgence. Head broader than long, slightly broader than the thorax in front, vertex behind the ocelli raised into a blunt cone-shaped prominence, eyes oval deeply emarginate, head behind the eyes moderately developed; mandibles very broad towards the apex, tridentate; antennae moderately stout, 1st joint of the flagellum short, 2nd a little longer, 3rd slightly longer than the 2nd. Thorax moderately long more or less rectangular, prothorax sharply truncate in front, mesonotum short, convex; scutellum longer than broad rounded posteriorly; median segment roundly oblique and declivous; forewings with two well-marked cubital cells, the 3rd cubital cell faintly traced; legs slender the tibiae without spines. Abdomen long, the basal segment petiolate at base nodose at apex, the 2nd segment broadest in the middle, the others decreasing gradually to the 7th. Head and thorax closely and very coarsely punctured cribrate; median segment with six somewhat irregular longitudinal carina, the middle two of which do not extend to the apex, the intervals between the carina coarsely reticulate. Abdomen finely, closely and regularly punctured except on the node of the basal segment where the punctures are large and coarse, ventral carina of this segment very slight trifid towards the apex.

Length ♂ 12 mm. Exp. 20 mm.

Described from a single example.

This remarkable form has the appearance of a *Dasy-labris*, but the emarginate eyes and tridentate mandibles do not allow of its being entered under that genus. The shape of the head and the multicarinated median segment serve to distinguish it from all African forms of *Mutilla* known to me.

20. MUTILLA IPHONOE, form n.

NATAL (*Coll. W. W. Saunders*).

♀. Black, basal two-thirds of the mandibles, antennal tubercles, apex of scape, basal two joints of the flagellum of the antennae and the thorax dorsally and on the sides red. Head, thorax and abdomen covered with sparsely scattered erect yellowish hairs, the basal abdominal segment with an apical triangular patch in the middle above the 2nd, 3rd and 6th segments with dorsal, and the 2nd to the 6th segment with ventral bands or fringes of similar pubescence. Head subquadrate broader than long and a little broader than the thorax, very closely and somewhat coarsely punctured; mandibles somewhat obtuse at apex, antennal tubercles rounded, prominent; eyes placed rather forward equidistant from the occiput and the base of the mandibles, head well developed behind the eyes. Thorax rectangular not broader or narrower posteriorly than anteriorly above coarsely punctured the sides crenulate, the pronotum slightly arched in front; the median segment abruptly truncate, the posterior angles above well marked the margin with a row of five posteriorly-pointed long spines in the middle and two much shorter ones on each side at the angles. Abdomen more finely punctured than the thorax, basal segment short, with its ventral carina deep and incised in the middle, 1st to the 6th segment smooth along their bases, sparsely punctured along their posterior margins, the pygidial area well defined very firmly punctured.

Length ♀ 9 mm.

Described from a single example.

21. MUTILLA LYSIPPE, form n.

RHODESIA: Eastern Loangwa District, Petauké 2400 ft. ♀: Feb. 22, 1905 (*S. A. Neave*).

♀. Head, legs and abdomen black, thorax dark red. Head, thorax and abdomen covered with sparsely scattered erect black hairs, the abdomen in addition with close thick recumbent black pile, two small spots transversely on the 2nd segment above, a band on the 3rd segment above, long fringes on the 2nd to the 6th ventral

segment continued round the base of the latter above, of pale yellowish pubescence, the legs thickly studded with erect pale yellow hairs, the tibial calcaria pale yellow, the tibiae above with a double row of short reddish-brown spines. Head small, about as broad as the thorax closely punctured somewhat lenticular, three times as broad as long, the front faintly convex, the occiput arched; mandibles acutely pointed with a short blunt tooth on their inner margins, antennae opaque, antennal tubercles rounded, not prominent 2nd joint of the flagellum about a third longer than the 3rd or 4th joints; eyes large prominent, their lower orbits closer to the bases of the mandibles than their upper orbits to the occiput; head behind the eyes not much developed, rounded. Thorax from above rectangular dorsally longitudinally deeply carinate striate, the pronotum arched in front, the humeral angles rounded, median segment posteriorly vertically truncate, its posterior face vertically carinate, the apical margin above toothed, the teeth, which are continuations of the irregular longitudinal carinae covering the dorsal surface of the thorax, short. Abdomen massive above closely punctured, beneath: the bases of segments 2 to 6 very finely transversely striate, their apices punctured, ventral carina of basal segment very slightly raised twice incised, pygidial area well defined, slightly convex, longitudinally striate.

Length ♀ 11 mm.

Described from a single example.

22. *MUTILLA RUFOCORONATA*, form n.

NATAL (*Coll. W. W. Saunders*).

♂. Black; the apical half of the mandibles, the tubercles and scape of the antennae and a broad transverse band on the posterior half of the head dark red, the thorax and legs brighter red. Head thorax and abdomen with sparsely scattered erect black hairs, the legs with shorter similar yellowish hairs; the apical margins of the 1st and 3rd abdominal segments each with a broad transverse band of golden pubescence, the apical margin of the 2nd segment with a narrow fringe of the same pubescence, beneath which the segment is bright testaceous red. Head rounded, not wider than the thorax, finely punctured; eyes large slightly convex, their upper orbits as far from the posterior angle of the occiput as their lower orbits from the base of the mandibles; mandibles acute at apex, simple; 2nd and 3rd joints of the antennae subequal. Thorax closely punctured, the punctures running into longitudinal striae, wider anteriorly than posteriorly, the apex roundly truncate; legs robust, the intermediate and posterior tibiae with a single row of short spines; the calcaria

white. Abdomen subsessile as long as the head and thorax united closely punctured above; ventral carina of basal segment well marked, truncate posteriorly; 6th segment convex without a pygidial area.

Length ♀ 7 mm.

Described from a single example.

23. *MUTILLA LOANGWANA*, form n.

RHODESIA: Loangwa District, Petauké 2400 ft.: April 1, 1905 (*S. A. Neave*).

♂. Black; the third and succeeding segments of the abdomen very dark ferruginous red; wings dark shining purple. Head not so wide as the thorax, not much developed behind the eyes; with somewhat sparse long black hairs on the vertex, front and underside; mandibles large and powerful, smooth and shining, armed with a small tooth medially on their edges, apex acute; clypeus slightly convex, smooth and shining, anteriorly widely emarginate; antennae comparatively short and stout, scape punctured and clothed with short hairs, flagellum with the 2nd, 3rd and 4th joints subequal; front above the antennae, vertex and sides of the head coarsely punctured, the sculpturing obscured by long hairs; ocelli not prominent; eyes rather small neatly triangularly emarginate on their inner orbits. Thorax broad and massive, very coarsely punctured and somewhat thickly covered with long black hairs; pronotum very short, posteriorly widely arched; mesonotum slightly convex, with six longitudinal carinae, none of which reach the anterior margin, the medial four in pairs with a deep groove between each pair; scutellum highly conical, divided by a deep smooth excavation from the mesonotum, median segment remarkably massive and broad, broader than long, very coarsely cribrate, apically truncate, two short longitudinal carinae from base down the middle ending in a loop before attaining the edge of the truncation; sides of the median segment sharply defined and carinate. Wings broad; forewing with three cubital cells; tegulae black, rounded, convex, covered with more or less arcuate or curved fine striae. Legs black; intermediate and posterior tibiae thickly clothed with long black hair. Abdomen: sessile, massive; basal segment more or less cupuliform, closely punctured, and distinctly subapically constricted by a broad but shallow sulcation, entirely clothed with long black hairs, beneath with a short straight highly raised wedge-shaped carina; second segment smooth shining, remotely and finely punctured above, beneath with large scattered punctures, fringed along upper

and under margin by stiff black hairs ; remaining segments closely and finely punctured, more or less densely covered with long reddish hairs, that on the apical segment turn to black.

Length ♂ 21 mm. Exp. 46 mm.

Described from a single example.

Both in coloration and in sculpture unlike any African form known to me. It has, however, a distant resemblance to the males of the "*sexmaculata*" group of *mutilla* from India.

24. *MUTILLA CLOANTHA*, Péringuey.

Mutilla nigripennis, Sm. (nec. Oliv.), Cat. Hym. B.M., iii, 1855, p. 19.

Mutilla cloantha, Pér., Ann. S.A. Mus., i, 1898, p. 88.

NATAL ♂ (*W. W. Saunders Coll.*)

25. *MUTILLA TETTENSIS*, Gerstaecker.

Mutilla tettensis, Gerst., Monats. Akad. Wiss. Berlin, 1857, p. 511 ; id. Peters, Reise n. Mozamb., v, 1862, p. 488 ♀, pl. 31, fig. 7 ; Sich. and Radosz., Hor. Soc. Ent. Ross., vi, 1869, p. 254 ; André, Wytsman's Gen. Ins. Hym., Fasc. 11, 1903, p. 38.

NATAL ♀ (*W. W. Saunders Coll.*)

26. *DASYLABROIDES IDIA*, Péringuey.

Mutilla idia, Pér., Ann. S.A. Mus., i, pt. 2, 1897, p. 360 ♀.
Dasylabroides idia, André, Wytsman's Gen. Ins. Hym., 1903, p. 23.

RHODESIA : Mashonaland, Salisbury 5000 ft. ♀ (*G. A. K. Marshall*).

A single specimen that agrees well with Péringuey's description.

27. *DASYLABROIDES INCONSPICUA*, Smith.

Mutilla inconspicua, Sm., Descr. New sp. Hym. B.M., 1879, p. 191 ♂ ♀.

Dasylabroides inconspicua, André, Wytsman's Gen. Ins. Hym., 1903, p. 23.

NATAL ♂ (*Coll. W. W. Saunders*); RHODESIA : Melsetter, Gazaland 3600 ft. ♂ (*G. Marshall*).

28. MYRMILLA AFRICANA, form n.

NATAL (*Coll. W. W. Saunders*).

♂. Black and shining; the apices of the mandibles, the antennal tubercles, apex of the scape, 2nd joint of the flagellum of the antennae, the pro- and mesonotum, and scutellum brick red. Head, thorax, legs and abdomen covered with sparsely scattered erect white hairs. Head finely punctured broader than long and slightly broader than the thorax, mandibles acutely pointed, apical half longitudinally grooved, two preapical blunt teeth on the inner margin; antennae opaque, 2nd and 3rd joints of the flagellum subequal; eyes oval, entire, slightly convex. Thorax rounded in front, posteriorly roundly truncate, finely punctured, the median segment reticulate; wings flavo-hyaline, forewing with the stigma small, the radial cell short and wide, two complete cubital cells, the third cubital faintly traced, the 2nd recurrent nervure present, terminating well beyond the 2nd cubital cell; legs slender, tibial calcaria elongate. Abdomen nearly smooth, only very sparsely and finely punctured; 1st segment with the carina not much raised.

Length ♂ 6 mm. Exp. 11 mm.

Described from a single example.

NOTE.—The manuscript of this memoir gave the name *albicans* to the above species; but the specimen itself was distinctly labelled "*africana*, Bingham ♂, Type."—E. B. P.

29. DOLICHOMUTILLA VETUSTATA, form n.

S. RHODESIA: Mt. Kapsuku, nr. Feira 3400 ft. ♂: May 20, 1904; and N.E. RHODESIA, East Loangwa Dist., Petauké 2400 ft. ♂♂: March 1 and 17, 1905 (*S. A. Neave*).

The specimen bearing the date March 17, 1905, is marked as the type.

♂. Jet black, the face in front somewhat sparsely clothed with long white hairs, the thorax with scattered erect black hairs the basal five abdominal segments fringed on their apical margins laterally with long white hairs; wings dark fuscous with a magnificent purple effulgence. Head, pro- and mesonotum, scutellum and post-scutellum very densely and somewhat coarsely punctured; median segment reticulate, the reticulations large even and deep; abdomen closely but more finely punctured with the punctures shallower than on the thorax, on the middle of the segments above the punctures are sparse, the segments showing more or less of a smooth area, intermediate and posterior tibiae without spines. Head narrower

than the thorax, transverse, not much produced behind the eyes; mandibles broad, longitudinally grooved, with a preapical tooth on the inner edge; eyes convex, only slightly indented on the inner orbits, antennae stout, 2nd joint of flagellum half as long again as the 3rd; thorax slightly narrowed in front; scutellum raised into a conical large tubercle; median segment very oblique posteriorly slightly convex, sharply carinate on each side; abdomen subsessile, 1st segment short, its ventral carina well raised, its edge vertically sinuate.

Length ♂ 13-14 mm. Exp. 25-28 mm.

This form may be a variety of *D. atrata*, Linn., but the description of the latter speaks of a white transverse band on the abdomen, in the former the segments 1-5 are only laterally fringed with white.

30. DOLICHOMUTILLA GUINEENSIS, Fabr.

Mutilla guineensis, Fabr., Ent. Syst., ii, 1793, p. 367; Lep. Hym., iii, p. 640 ♀.

RHODESIA: East Loangwa, Petauké 2400 ft. ♀ (*S. A. Neave*).

A single ♀.

31. DOLICHOMUTILLA SYCORAX, Smith.

Mutilla sycorax, Sm., Cat. Hym. B.M., iii, 1855, p. 19 ♀.

Mutilla guineensis, Gerst. (nec Fabr.), Monats. Akad. Wess. Berlin, 1857, p. 511 ♂; idem. Peters Reise n. Mozamb., Zool., v, 1862, p. 486, pl. 31, figs. 4 and 5 ♂ ♀; André, Zeits. Hym. Dipt., i, 1901, p. 339.

NATAL ♀ (*Coll. W. Saunders*); RHODESIA: Mashonaland, Salisbury 5000 ft. ♀ (*G. Marshall*); Lagos ♀ (*J. A. Cremer*).

32. DOLICHOMUTILLA NEAVEI, form n.

N.E. RHODESIA: East Loangwa District, Petauké 2400 ft. ♂: Dec. 28 and 31, 1904 (*S. A. Neave*).

The specimen captured Dec. 28, 1904, is marked as the type.

♂. Black and shining; the mandibles close to the apex, the pro- and mesonotum, scutellum and tegulae dark red; the head, thorax and abdomen covered with long erect black hairs; the mandibles beneath, the lower portion of the inner orbits, a fringe posteriorly on the scutellum and another posteriorly on the apical abdominal segment

covered with silky pale yellow hairs. There are besides many scattered whitish yellow erect hairs on the head posteriorly, on the sides of the median segment, on the basal segment of the abdomen, and on the apical three or four ventral segments. Abdomen above with two large rounded spots transversely on the 2nd segment and broad, medially broadly interrupted, bands of silky short white pubescence on the 3rd and 4th segments. Wings fuscous the terminal margins broadly and costa narrowly of the forewings darker fuscous. Head densely punctured, much broader than long, but much narrower than the thorax anteriorly, the face flat, slightly concave, not much developed behind the eyes, obliquely rounded. Mandibles and clypeus highly polished, smooth, the former acute at apex with a strong inner preapical tooth; eyes elongate strongly emarginate on the inner side above; antennae opaque, 2nd and 3rd joints subequal. Thorax massive anteriorly, the pro- and mesonotum and scutellum closely and coarsely punctured, the tegulae smooth and shining; mesonotum with three longitudinal short carinae, the middle carina the longest, and a deep longitudinal groove on either side, these grooves not extended to the anterior margin of the mesonotum; scutellum with a short longitudinal carina raised into a tubercle at apex; median segment coarsely reticulate, the sides sharply carinate, the posterior face sloping to the apex; wings: forewing with three cubital cells; legs without spines. Abdomen subsessile, coarsely punctured, the 2nd segment with a central smooth unpunctured highly polished area.

Length ♂ 17 mm. Exp. 33 mm.

Resembles in colouring *Mutilla purpurata*, but the markings on the abdomen are quite different, and moreover it belongs to a different genus or subgenus.

33. DASYLABRIS NYCTIMENE, Péringuey.

Mutilla nyctimene, Pér., Ann. S.A. Mus., i, 1898, p. 91 ♂.

Dasylabris nyctimene, André, Wytsman's Gen. Ins. Hym., Fasc. 11, 1903, p. 67.

RHODESIA: Mashonaland, Salisbury 5000 ft. ♂ (*G. Marshall*.)

34. DASYLABRIS MEPHITIS, Smith.

Mutilla mephitis, Sm., Cat. Hym. B.M., iii, 1855, p. 21 ♀.

Dasylabris mephitis, André, Zeits. Hym. Dipt., 1901, p. 312 ♀.

NATAL: Durban ♀ (*F. Muir*).

35. DASYLABRIS ATE, form n.

RHODESIA: Mashonaland, Salisbury, May 1905 (*G. Marshall*).

♀. Black, the legs red; the head, thorax and abdomen closely punctured and covered with erect white hairs which are most prominent on the legs; the abdomen with transverse pubescent white bands on the apical margins of the 1st and 2nd segments, the latter band dilated in the middle, the 5th segment with a thick apical fringe of white hairs. Head broader than the thorax in front, longer than broad, occiput and cheeks behind the eyes rounded; mandibles acute at apex, antennae short, 2nd joint of flagellum much longer than the 1st and slightly longer than the 3rd, eyes oval convex, placed on the sides of the head, equidistant above and below from the lateral angle of the head and from the base of the mandibles. Thorax oval, broadest in the middle, sides convex, not excavate, punctured as above. Abdomen as long as the head and thorax united; basal segments petiolate and nodose at apex, ventral carina twice indented, 2nd segment very long and massive, pygidial area small and hidden by the fringe of white hairs at the apex of the 5th segment.

Length ♀ 6 mm.

Described from a single example.

This is the smallest form of the genus known to me.

36. DASYLABRIS INFLATA, André.

Mutilla (Dasylabris) inflata, André, Zeits. Hym. Dipt., i, 1901, p. 313.

RHODESIA: Gazaland and Upper Buzi River 3500 ft. ♀ (*G. Marshall*).

37. STENOMUTILLA CAPICOLA, Péringuey.

Mutilla capicola, Pér., Ann. S.A. Mus., i, 1898, p. 47 ♀ ♂.
Mutilla (Stenomutilla) capicola, André, Zeits. Hym. Dipt., i, 1901, p. 320 ♀ ♂.

RHODESIA: Mount Kapsaku 2400 ft. ♂ (*S. A. Neave*); Salisbury 5000 ft. ♂ (*G. Marshall*).

38. *STENOMUTILLA CLELIA*, Péringuey.

Mutilla clelia, Pér., Ann. S.A. Mus., i, 1899, p. 366 ♂.

Mutilla (Stenomutilla) clelia, André, Zeits. Hym. Dipt., i, 1901, p. 322 ♂.

N.E. RHODESIA: East Loangwa District, Petauké 2400 ft.: ♂ Feb. 21, 1905; ♀ Jan. 27, 1905 (*S. A. Neave*).

The ♂ specimen has the wings torn off. The ♀, so far as I know, has not been previously described.

♀. Black, the mesonotum of the thorax very obscurely dark red. Head, thorax and abdomen coarsely densely cribrately punctured and covered sparsely with stiff, erect, black hairs, the punctures on the 2nd abdominal segment are elongate and run into heavy, coarse, longitudinal striations, the clypeus, lower part of the face, the scape of the antennae and the legs have a more or less dense clothing of silvery white hairs mixed with the black; transverse bands at the apices of the 1st and 2nd abdominal segments of pale yellowish white pubescence. Head transverse, broader than long, and not so broad as the thorax in front; mandibles acute at apex, clypeus highly polished and shining; antennae stout, 2nd joint of the flagellum somewhat longer than the 3rd; eyes: convex, prominent, placed in the middle of the sides of the head equally distant from the base of the mandibles and from the posterior lateral angle of the head. Thorax short, of the same shape as in the ♂, transverse anteriorly, the sides parallel for a short distance then obliquely inclined towards each other, the apex truncate, the pleurae excavate, coarsely cribrate not smooth. Abdomen: basal segment petiolate, nodose at apex, the ventral carina not prominent, 2nd segment very long and massive, apical segment convex above, without a pygidial area.

Length ♀ 10 mm.

39. *STENOMUTILLA BEROE*, Péringuey.

Mutilla beroe, Pér., Ann. S.A. Mus., i, 1898, p. 48 ♀.

Stenomutilla beroe, André, Wytsman's Gen. Ins. Hym., Fasc. 11, 1903, p. 68 ♀.

NATAL: Lake Umkomaas ♂ (*G. Leigh*); RHODESIA: Mashonaland, Salisbury 5000 ft. ♂ ♀ (*G. Marshall*); East Loangwa, Petauké 2400 ft. (*S. A. Neave*).

♂. Black, the thorax red. Head, thorax and abdomen covered with erect black hairs, the base of the mandibles, the front of the scape of the antennae, the occiput, the median segment posteriorly, the legs and transverse bands on the apices of the basal three abdominal

segments with long whitish yellow hairs ; the black hairs along the apical margins of the 3rd to the 6th abdominal segments forming fringes and tufts; wings dark fuscous with a purple effulgence, head from above transverse, extended well behind the eyes, rounded and closely punctured all over; mandibles broad at apex with a preapical inner tooth and a blunt tooth near the base on the outer edge. Clypeus smooth shining excavate, a strong carina between the bases of the antennae, eyes somewhat prominent, convex, the lower orbit closer to the base of the mandible than the upper orbit to the lateral posterior edge of the occiput, antennae slender, 2nd joint of the flagellum shorter than the 3rd, which is very slightly longer than the 4th. Thorax elongate oval, pro- and mesonotum and the pleurae, the scutellum and postscutellum coarsely punctured cribrate, tegulae of the wings small and smooth, median segment rounded reticulate, legs slender, punctured, intermediate and posterior tibiae with single rows of strong spines, basal joint of the posterior tarsi flattened, triangular; wings ample, forewing with three cubital cells. Abdomen elongate, basal segment very long, petiolate, nodose at apex; ventral carina simple not much raised extending about half the length of the segment from base, beyond it near the apical margin of segment there are two hollows or pits bounded and divided by slender short carina.

Length ♂ 16-19 mm. Exp. 28-32 mm.

Described from 7 ♂ examples.

40. ODONTOMUTILLA ANGULATA, Smith.

Mutilla angulata, Sm., Descr. New sp. Hym. B.M., 1879, p. 190 ♂.

Mutilla horrida, Sm., Descr. New sp. Hym. B.M., 1879, p. 192 ♀.

Odontomutilla angulata, André, Zeits. Hym. Dipt., i, 1901, p. 335.

(*angulata* ♂, *horrida* ♀).

NATAL ♀ (*W. W. Saunders Coll.*; *G. F. Leigh*; *F. N. Brown*); RHODESIA: Salisbury 5000 ft. ♀ (*G. Marshall*); East Loangwa, Petauké 2400 ft. ♀ (*S. A. Neave*).

I have provisionally placed a single ♀ from Petauké under *O. angulata* with much doubt. It is very much larger, more massive, looking at first sight very like a *Barymutilla*, but the head is not nearly so broad as the thorax in front, and the median segment is angulated posteriorly. In sculpture and markings it is practically

identical so far as can be seen (the specimen is much rubbed) with ♀ *O. angulata*. However, it is quite possibly distinct or perhaps it is the ♀ of the next form, *O. alienata*.

41. ODONTOMUTILLA ALIENATA, form n.

NATAL or O. R. Colony ♂ 1894-99 (*F. N. Brown*).

♂. Black, the pro- and mesonotum, the upper half of the pro- and mesopleurae, the scutellum and postscutellum red; the head, thorax legs and base and sides of the abdomen covered with short erect black hairs; the abdomen with a transverse broadly interrupted narrow pubescent white band on the apical margins of the 1st and 3rd segments; wings fuscous, tegulae yellowish red. Head not so broad as the thorax in front, transverse; mandibles acuminate at apex with a preapical blunt tooth on the inner margin, antennae stout, 1st and 2nd joints of the flagellum short subequal, 3rd joint much longer than the 2nd; eyes oval, deeply emarginate, head behind the eyes not much developed, rounded. Thorax short and broad, truncate anteriorly; scutellum broad flat, the lateral edges recurved, pointed, almost dentate posteriorly; median segment short and sloping with very large conical lateral projections, one on each side posteriorly; tegulae large, their apical edges recurved; forewings with two cubital cells and one recurrent nervure; legs stout with a double row of long spines on the intermediate and posterior tibiae. Abdomen sessile, about as long as the head and thorax united, basal segment short, its ventral carina deep, bi-indented. Head and thorax coarsely cribrately punctured, the punctures deeper and coarser on the mesonotum posteriorly and on the scutellum, median segment coarsely reticulate, the reticulations very wide; abdomen shining, coarsely punctured except on the middle and apical margins of the segments which are smooth and highly polished.

Length ♂ 13. Exp. 21 mm.

This form very closely resembles the ♂ of *O. angulata*, Smith, from which, however, it can be distinguished by the form of the median segment, which is much shorter than in *O. angulata*, the posteriorly produced lateral angles more massive and situated lower down; in *O. angulata* the pronotum is red only along the upper edge, in the present form it is red throughout; the wings in *angulata* are fusco-hyaline, in *alienata* very much darker with a purple effulgence.

Described from a single specimen of which the South African locality is unfortunately doubtful.

42. ODONTOMUTILLA RHUA, form n.

RHODESIA: Mashonaland, Salisbury ♂: Nov. 1903 (*G. Marshall*).

♂. Head, thorax, basal and apical segments of the abdomen black, abdominal segments 2-6 ferruginous red; wings very dark fuscous with a purple effulgence. Head, thorax basal and apical two abdominal segments covered with erect black hairs, the legs and sparse irregular apical fringes, dorsally and ventrally to the 2nd, 3rd, 4th and 5th abdominal segments with snow-white hairs. Head narrower than the thorax in front, transverse, mandibles acute at apex with a blunt preapical tooth on the inner edge; antennae stout, 1st and 2nd joints of the flagellum short, the 2nd slightly the longer, 3rd and 4th subequal both much longer than the 2nd, eyes oval deeply emarginate, head behind the eyes moderately developed, the occiput not transverse posteriorly, bluntly angulated. Thorax short the pronotum truncate anteriorly, the mesonotum slightly convex, the scutellum transversely rectangular, truncate posteriorly; median segment short, obliquely and steeply sloped with lateral posteriorly conical projections or teeth; forewings with two cubital cells and one recurrent nervure; tegulae large oval; legs moderately stout intermediate and posterior tibiae without distinct spines. Abdomen sessile as long as the head and thorax united, basal segment very short, its ventral carina not much raised, dentate at base. Head and thorax coarsely cribrately punctured; median segment with broad reticulations; abdomen shining more finely and sparsely punctured.

Length ♂ 11 mm. Exp. 21 mm.

This form is unlike any *Odontomutilla* known to me, and has a coloration that is common in the males of many true *Mutillas*.

Described from a single example.

43. ODONTOMUTILLA ERINNYIS, Péringuey.

Mutilla erinnyis, Pér., Ann. S.A. Mus., i, 1898, p. 92 ♂.

RHODESIA: East Loangwa, Petauké 2400 ft. ♂ (*S. A. Neave*).

44. ODONTOMUTILLA NOTATA, Lepeletur St. Fargeau.

Mutilla notata, Lepel., Hist. Nat. Hym., iii, 1845, p. 600;

André, Wytsman's Gen. Ins. Hym., Fasc. 11, 1903, p. 27.

CAPE OF GOOD HOPE ♀ (*Coll. W. W. Saunders*).

45. BARYMUTILLA PYTHIA, Smith.

Mutilla pythia, Sm., Cat. Hym. B.M., iii, 1855, p. 18 ♀.

Mutilla clelia, Pér., Ann. S.A. Mus., i, pt. 3, 1899, p. 443 ♀.

Mutilla cecilia, Pér., Ann. S.A. Mus., ii, pt. 5, 1901, p. 132
(note).

Barymutilla pythia, André, Zeits. Hym. Dipt., i, 1901,
p. 335 ♂ ♀.

RHODESIA: East Loangwa, Petauké 2400 ft. ♀ (*S. A. Neave*).

46. BARYMUTILLA CEPHEUS, Smith.

Mutilla cepheus, Sm., Cat. Hym. B.M., iii, 1855, p. 18 ♀.

Barymutilla cepheus, André, Wytsman's Gen. Ins. Hym.,
Fasc. 11, 1903, p. 32.

RHODESIA: East Loangwa, Petauké 2400 ft. ♀ (*S. A. Neave*); *var.*, Manica, Mpudzi River 3000 ft. ♀ (*G. Marshall*).

The variety collected by Mr. Marshall is a larger, heavier insect, with the thorax a much brighter red, but the pubescent markings on the abdomen are identical with that of typical *cepheus*, Smith, and the shape of the head, thorax and abdomen and the sculpture are the same.

47. BARYMUTILLA DESPICATA, form n.

RHODESIA: Mashonaland, Umfuli River ♀: Nov. 1895
(*G. Marshall*), in the F. N. Brown Collection.

♀. Black, the thorax dark red; head thorax and abdomen with abundant erect black hairs; the clypeus shaded with yellow hairs; the front of the scape of the antennae, the head beneath, a fringe along the occiput, the pleurae of the thorax, the legs, the sides of the abdomen, posterior fringes to the ventral segments 2 to 5, and the pygidium clothed with silvery hairs; basal segment of the abdomen above with lateral quadrate spots on its posterior margin and a transverse band on the third segment, which is widely interrupted in the middle, of close set white pubescence. Head, thorax and abdomen coarsely, closely and deeply punctured, the punctures on the head and thorax forming short irregular carinae. Head not quite so wide as the thorax in front, transverse, produced behind the eyes; mandibles tridentate; antennal tubercles smooth, antennal hollows bounded above by sharp carinae that extend on each

side to the lower orbits of the eyes ; antennae stout, the 2nd joint of the flagellum a little longer than the 3rd, the 3rd and 4th subequal ; eyes oval situated midway between the lateral angles of the occiput and the base of the mandibles. Thorax truncate in front, the sides nearly parallel, slightly narrowed posteriorly, bluntly tuberculate in the middle, thorax posteriorly truncate ; legs stout, posterior tibiae with a single row of four or five long spines. Abdomen sessile, very massive, basal segment disciform, short, ventral carina short, bluntly dentate in the middle, 2nd segment long beneath, longitudinally but very shortly carinate ; pygidium convex.

Length ♀ 17 mm.

Described from a single example.

The females of different forms of *Barymutilla* are in many cases very like each other, the markings of the abdomen being very similar. The present form differs from ♀ *B. astarte*, Smith, and *B. pythia*, Smith, in the unmarked 2nd abdominal segment and in the form of the ventral carina of the 1st segment ; from *B. comparata*, Smith, by the latter character, by the narrower head and by the coarser puncturation.

48. BARYMUTILLA COMPARATA, Smith.

Mutilla comparata, Sm., Descr. New. sp. Hym. B.M., 1879, p. 191.

Barymutilla comparata, André, Wytsman's Gen. Ins. Hym., Fasc. 11, 1903, p. 32.

NATAL ♀ (*W. W. Saunders Coll.*).

49. BARYMUTILLA COMPARATA, Smith, *var. effecta*, var. n.

NATAL : Durban ♀ (*G. F. Leigh*) ; RHODESIA : Mashonaland, Salisbury 5000 ft. ♀ : Dec. 1902 (*G. Marshall*).

The example from Salisbury is marked as the type of the following description—

♀. In form and sculpture identical with *B. comparata*, Smith, differs only in that the 2nd abdominal segment is not unmarked but bears two parallel round pubescent white spots on its apical margin, one on each side of the middle, from each of which a short very slender line of similar pubescence extends outwards.

Length ♀ 12-14 mm.

Family SCOLIIDAE.

1. *SCOLIA (DISCOLIA) CYANEA*, Lepeletier.

Scolia cyanea, Lepel., Hist. Nat. Ins. Hym., iii, 1845, p. 525 ♂; Burm., Abh. naturf. Ges. Halle., i, pt. 4, 1853, p. 38 ♀ ♂; Bingh. A.M.N.H. (7), ix, 1902, p. 345. *Scolia (Discolia) cyanea*, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 81 ♀ ♂.

NATAL ♂ ♀ (*Coll. W. W. Saunders*); Durban ♂ (*G. F. Leigh*).

2. *SCOLIA (DISCOLIA) MELANARIA*, Burmeister.

Scolia melanaria, Burm., Abh. naturf. Ges. Halle., i, pt. 4, 1853, p. 38 ♂; Gerst. Peters Reise n. Mozamb., Zool., v, 1862, p. 494 ♀ ♂; Bingh., A.M.N.H. (7), ix, 1902, p. 344.

Scolia (Discolia) melanaria, Sauss. and Sich., Spec. Gen. Scol., 1864, p. 82 ♀ ♂.

Discolia ruficornis, var. *melanaria*, Grib., Mem. Acad. Sci. Bolog. (3), iv, 1896, p. 47.

GABOON ♂, NATAL ♂ (*Coll. W. W. Saunders*); RHODESIA : East Loangwa, Petauké 2400 feet ♀ ♂ (*S. A. Neave*).

3. *SCOLIA (DISCOLIA) RUFICORNIS*, Fabricius.

Scolia ruficornis, Fabr., Ent. Syst., ii, 1793, p. 230; Gerst. v. d. Deck, Reise in Ost. Afr., 1873, p. 334 ♀ ♂; Bingh. A.M.N.H. (7), ix, 1902, p. 244. *Scolia (Discolia) ruficornis*, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 85 ♀ ♂.

Without locality, but probably NATAL ♂ ♀ (*Coll. W. W. Saunders*); RHODESIA : East Loangwa, Petauké 2400 ft. ♂ (*S. A. Neave*).

One pair ♂ and ♀ from the Saunders collection have the flagellum of the antennae (except the basal joint) bright yellow, not red, and the ♀ of this pair has the front of the head dusky red. It is quite possibly distinct, but then they are both without locality.

4. *SCOLIA (DISCOLIA) TERMINALIS*, Saussure.

Scolia (Discolia) terminalis, Sauss., Ann. Soc. Ent. Fr. (3), vi, 1858, p. 207 ♀ ♂; id. and Sich., Spec. Gen. Scol., 1864, p. 95.

CAPE OF GOOD HOPE ♂ (*Coll. W. W. Saunders*); RHODESIA: Hill near Fort James 4-5000 ft. ♀ (*S. A. Neave*).

Bears a very close resemblance to the Oriental *Liacos* (*Triliacos*) *analis*, Fabr., but is a true *Scolia* with only one discoidal cell.

5. SCOLIA (DISCOLIA) SENEX, Smith.

Scolia senex, Sm., Cat. Hym. B.M., iii, 1855, p. 94 ♂.

Scolia (*Discolia*) *senex*, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 98 ♀ ♂.

CAPE OF GOOD HOPE ♂ (*Coll. W. W. Saunders*); NATAL: Estcourt ♀ (*G. Marshall*).

A single ♂ specimen which I believe to be the type, as the insect was originally described from the Saunders collection and there is no other ♂ specimen of the form in the collection of the British Museum that dates back to Smith's day.

6. SCOLIA (DISCOLIA) CHRYSOTRICA, Burmeister.

Scolia chrysotricha, Burm., Abh. naturf. Ges. Halle., i, pt. 4, 1853, p. 32 ♀; Bingham, A.M.N.H. (7), ix, 1902, p. 345.

Scolia (*Discolia*) *chrysotricha*, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 98 ♀ p.

Without locality, but probably NATAL ♂ ♀ (*Coll. W. W. Saunders*). One specimen, a ♂, has the wings particularly dark, almost fuscous, the yellow confined to a very narrow strip along the basal two-thirds of the costa of the forewing.

7. SCOLIA (DISCOLIA), DISPAR, Klug.

Scolia dispar, Klug, Symb. Phys., Dec. 3, 1832, Ins., pl. 26, fig. 1 ♀, fig. 2 ♂; Burtn., Abh. Naturf. Ges. Halle., i, pt. 4, 1853, p. 34 ♀ ♂; Bingham, A.M.N.H. (7), ix, 1902, p. 345.

Scolia (*Discolia*) *dispar*, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 76 ♀ ♂.

Scolia lateralis, Klug, Symb. Phys., Dec. 3, 1832. Ins., pl. 26, fig. 3 ♀, fig. 4 ♂, *var.*

ARABIA ♀ ♂ and *var. lateralis* DONGOLA ♂ ♀ (*Coll. W. W. Saunders*).

8. *SCOLIA (DISCOLIA) ALARIS*, Saussure.

Scolia alaris, Sauss., Ann. Soc. Ent. Fr. (3), vi, 1858, p. 203, ♀ ♂; Bingham, A.M.N.H. (7), ix, 1902, p. 344.

Scolia (Discolia) alaris, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, figs. 97 and 282 ♀ ♂.

Without locality, but probably NATAL; ♂ *not typical* (Coll. W. W. Saunders).

9. *SCOLIA (DISCOLIA) MICROMELAS*, Sichel.

Scolia (Discolia) micromelas, Sich., Sauss. and Sich.; Cat. Spec. Gen. Scol., 1864, p. 82 ♂.

RHODESIA: Mashonaland, Salisbury 5000 ft. ♂ (*G. Marshall*); East Loangwa, Mbala country (*S. A. Neave*).

10. *SCOLIA (DISCOLIA) MEGAERA*, Saussure.

Lacosi megaera, Sauss., Stett. Ent. Zeit., xx, 1859, p. 180 ♀.

Scolia (Discolia) megaera, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 90 ♀.

NATAL ♀ (Coll. W. W. Saunders); near Durban ♀ (*G. F. Leigh*).

The specimen from the Saunders collection is in bad condition, and I am doubtful whether I have identified it correctly.

11. *SCOLIA (DISCOLIA) MERIDIONALIS*, Saussure.

Lacosi meridionalis, Sauss., Stett. Ent. Zeit., xx, 1859, p. 182 ♀.

Scolia (Discolia) meridionalis, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 92 ♀.

NATAL: S. of Durban ♂ (*G. F. Leigh*).

The specimen, which I identify as the ♂ of the above form, differs from Saussure's description of the ♀ as follows. Head black, not obscure rufo-ferruginous, the emargination of the eyes in front and a line behind them reddish ferruginous, the sides and apical margin of the clypeus also similarly stained. Otherwise in sculpture and pubescence it is identical with *meridionalis* as described by Saussure.

12. LIACOS (TRILIACOS) NIGRITA, Fabricius.

Scolia nigrata, Fabr., Spec. Ins., i, 1781, p. 452 ♀.

Scolia (Liacos) nigrata, Sm., Cat. Hym. B.M., iii, 1855, p. 114 ♀.

Liacos (Triliacos) nigrata, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 35 ♀ ♂.

Liacos nigrata, Sauss., Grandid. Hist. Madagasc., xx, pt. 1, 1892, p. 227, pl. 5, figs. 11 and 12 ♀ ♂.

NATAL ♀ (*Coll. W. W. Saunders*); RHODESIA: Melsetter, Gazaland ♂ (*G. Marshall*), Natal ♂ (*G. F. Leigh*).

13. ELIS (DIELIS) DIMIDIATIPENNIS, Saussure.

Elis dimidiatipennis, Sauss., Mem. Soc. Phys. and Hist. nat. Genève, xiv, pt. 1, 1854 (Mel. Hym.), p. 64 ♀.

Scolia fenestrata, Sm., Cat. Hym. B.M., iii, 1855, p. 104 ♀.

Elis (Dielis) dimidiatipennis, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 168.

RHODESIA: Mashonaland, Salisbury 5000 ft. (*G. Marshall*).

14. ELIS (DIELIS) SIGNATA, Smith.

Scolia signata, Sm., Cat. Hym. B.M., iii, 1855, p. 105 ♀.

Elis (Dielis) signata, Sauss. and Sich., Cat. Sp. Gen. Scol., 1864, p. 176 ♀.

RHODESIA: East Loangwa, Petauké 2400 ft. 2 ♀ 6 ♂ (*S. A. Neuve*); also 1 ♂ 1 ♀ from other Rhodesian localities and 2 ♂ 1 ♀ Salisbury (*G. Marshall*). The author's name is on a ♂ from Salisbury (1895), which is regarded as the type of the following description.

The ♂, which has not before been described closely, resembles the ♀, but the head and thorax are densely clothed with short hoary yellowish pubescence that hides the sculpture, the wings are hyaline with only the very faintest tinge of yellow, and the transverse yellow bands on the segments of the abdomen above are very broad and deeply excavated on each side. In the ♀ these bands are only slightly laterally excavate.

15. ELIS (DIELIS) COLLARIS, Fabricius.

Tiphia collaris, Fabr., Syst. Ent., 1775, p. 354.

Scolia thoracica, Fabr., Mant. Ins., i, 1787, p. 281 (nec.

Tiphia thoracica, Fabr., Ent. Syst., Suppl., 1798, p. 254).

- Scolia senilis*, Fabr., Ent. Syst., ii, 1793, p. 237.
Scolia hirticollis, Fabr., Syst. Piez., 1804, p. 243.
Scolia vestita, Klug, Symb. Phys., 1832, Ins., pl. 27, fig. 6 ♀.
Scolia discolor, Klug, *l. c.*, Ins., pl. 27, fig. 7.
Campsomeris ruficollis, Lepel., Hist. Nat. Ins. Hym., iii, 1845, p. 500.
Elis canescens, Sauss., Mem. Soc. Phys. and Hist. Nat. Genève, xiv, pt. 1, 1854 (Mel. Hym. i), p. 55.
Elis (Dielis) collaris, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, pp. 163 and 295 ♀ ♂.
 EGYPT ♀ (*Coll. W. W. Saunders*).

16. ELIS (DIELIS) ALBICOLLIS, Christ.

- Sphex albicollis*, Christ, Naturg. d. Ins., 1791, p. 260, pl. 26, fig. 1 ♀.
Sphex flavirons, Christ, *l. c.*, p. 261, pl. 26, fig. 3 ♀.
Tiphia thoracica, Fabr., Ent. Syst., Suppl., 1798, p. 254.
Campsomeris aureicollis, Lepel., Hist. Nat. Ins. Hym., iii, 1845, p. 499.
Scolia eriophora, Klug, Symb. Phys., 1832, pl. 27, fig. 5 ♂.
Elis (Dielis) coelebs, Sichel, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 184.
Elis (Dielis) thoracica, Sauss. and Sich., Cat. Spec. Gen. - Scol., 1864, p. 188.
Elis thoracica var. coelebs, Sauss., Grandidier's Hist. Madagascar, xx, pt. i, 1892, p. 223.
Scolia abicollis, Dalla Torre, Cat. Hym., viii, 1897, p. 145.
Elis albicollis, Bingham, A.M.N.H. (7), ix, 1902, p. 346.
 NATAL ♀ ♂ (*Coll. W. W. Saunders*); RHODESIA: Salisbury 5000 ft. ♀ (*G. Marshall*); East Loangwa, Petauké 4500 ft. ♀ ♂ (*S. A. Neave*).

A very puzzling form of which *E. eriophora*, Klug, is said by Dalla Torre to be the ♂.

17. ELIS (DIELIS) XANTHURA, Saussure.

- Elis (Campsomeris) xanthura*, Sauss., Ann. Soc. Ent. Fr., 1858, p. 225 ♀.
Elis (Dielis) xanthura, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 169 ♀.
 RHODESIA: East Loangwa 2500 ft., Petauké ♀ (*S. A. Neave*).

18. ELIS (DIELIS) FASCIATELLA, Klug.

Scolia fasciatella, Klug, Symb. Phys., 1832, Ins., pl. 27, fig. 8 ♂; Smith, Cat. Hym. B.M., iii, 1855, p. 103.

Elis (Dielis) fasciatella, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 170.

RHODESIA: Mashonaland, Salisbury 5000 ft. ♂ (*G. Marshall*); East Loangwa, Petauké 2400 ft. ♂ (*S. A. Neave*).

The ♀ of this form is still unknown. It may, however, be *Elis (Dielis) aureola*, Klug, and the males may be dimorphic.

19. ELIS (DIELIS) GODEFREDI, Sichel.

Elis (Campsomeris) godefredi, Sich., Ann. Soc. Ent. Fr., 1858, p. 227 ♂.

Elis (Dielis) godefredi, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 177 ♂.

NATAL ♂ (*G. F. Leigh*); RHODESIA: Mashonaland, Salisbury 5000 ft. ♂ (*G. Marshall*); East Loangwa, Petauké 2400 ft. ♂ (*S. A. Neave*).

20. ELIS (DIELIS) LACHESIS, Saussure.

Elis (Campsomeris) lachesis, Sauss., Stett. Ent. Zeit., xx, 1859, p. 262 ♀.

Elis (Dielis) lachesis, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 182, pl. 2, fig. 16 ♀.

NATAL ♀ (*G. Marshall*); RHODESIA: Mashonaland, Salisbury 5000 ft. ♂ (*G. Marshall*); East Loangwa, Petauké 4500 ft. ♀; and Melsetter, Gazaland ♀ (*S. A. Neave*).

The ♂ which I believe to be the ♂ of this form very closely resembles the ♂ of *E. albicollis*, but it is a smaller slighter insect with the head and thorax more sparsely pubescent, and the apical margin of the 1st as well as those of the 2nd to 5th abdominal segments with a transverse reddish yellow band.

21. ELIS (DIELIS) CLOTHO, Saussure.

Elis (Campsomeris) clotho, Sauss., Stett. Ent. Zeit., xx, 1859, p. 263 ♀.

Elis (*Dielis*) *clotho*, Sauss. and Sich., Cat. Gen. Spec. Scol., 1864, p. 182 ♀.

NATAL: Durban ♂: Jan. 18, 1906 (*G. F. Leigh*);
RHODESIA: Mashonaland, Salisbury ♀ (*G. Marshall*);
Melsetter, Gazaland ♀ (*S. A. Neave*).

It is with considerable hesitation that I assign the single ♂ specimen from Durban in Natal to the above form. If it is not the ♂ of *E. clotho*, but previously undescribed, it may stand as *E. leighi* mihi.

♂. Black with an iridescent blue sheen on the abdomen; head, thorax and abdomen covered all over with a more or less sparsely set clothing of soft erect cinereous hairs, tibial calcaria of the posterior pair of legs white, anal spines black; the base of the mandibles, upwardly convergent short stripes on the sides of the clypeus, the posterior margin of the pronotum, lateral transverse short lines one on each side on the scutellum, a medial short similar line on the postscutellum, and the apical margins of the 2nd, 3rd and 4th abdominal segments pale dull yellow; of the last-mentioned markings that on the 2nd segment is deeply, on the 3rd slightly emarginate laterally, the marking on the 4th segment is a simple transverse even band. Head, pro- and mesonotum, scutellum, postscutellum and abdomen above with sparsely scattered fine and very shallow punctures; median segment regularly and more closely punctured above, smooth and impunctate on its posterior face. Head flat, not as broad as the thorax; mandibles acute at apex, clypeus strongly convex, face in front raised, tuberculous between the antennae; these latter filiform opaque, eyes deeply emarginate above on their inner margins, ocelli prominent. Thorax oval; median segment truncate and concave posteriorly; wings fuscohyaline with a bronzy, in some lights a purplish effulgence, forewing with two cubital cells and two recurrent nervures, legs slender unarmed. Abdomen: elongate slender, basal segment subpetiolate, nodose towards apex, a strong constriction between it and the 2nd segment, both above and below.

Length ♂ 17. Exp. 28 mm.

The above-described ♂ resembles more or less the males of *E. villosa*, *fasciatella* and *godefredi*, but can be distinguished from these three forms by the paucity and narrowness of the yellow markings on the abdomen, by the darker colour of the wings, and by the shape of the median segment which has its posterior face much more deeply concave.

22. ELIS (DIELIS) FASCIATIPENNIS, Smith.

Scolia fasciatipennis, Sm., Cat. Hym. B.M., iii, 1855, p. 103 ♀ ♂.

Elis (Dielis) fasciatipennis, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 169 ♀ ♂; Kirby, Trans. Ent. Soc., 1889, p. 448 ♀ ♂.

RHODESIA: Mashonaland, Salisbury 5000 ft. ♀ (*G. Marshall*).

23. ELIS (DIELIS) AUREOLA, Klug.

Scolia aureola, Klug, Symb. Phys., 1832, pl. 27, fig. 11 ♀.

Colpa dimidiata, Lepel., Hist. Nat. Ins. Hym., iii, 1845, p. 549 ♀.

Elis (Dielis) aureola, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 173 ♀.

NATAL: Durban ♀ (*G. F. Leigh*); RHODESIA: East Loangwa, Petauké 4500 ft. ♀ (*S. A. Neave*).

24. ELIS (DIELIS) FELINA, Saussure.

Elis (Campsomeris) felina, Sauss., Stett. Ent. Zeit., xx, 1859, p. 265 ♀ ♂.

Elis (Dielis) felina, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 175 ♀ ♂.

NATAL: Durban ♀ (*G. F. Leigh*); RHODESIA: Mashonaland, Salisbury 5000 ft. ♂ (*G. Marshall*).

Saussure, when describing *E. felina*, remarked that it was possibly a variety only of *E. aureola*, Klug. This I think very likely, the only structural differences between *Elis aureola* and *Elis felina* are that the former insect has the head above highly polished, smooth and shining, the thorax above also smooth with only one or two punctures; *Elis felina*, on the contrary, has the head and thorax above closely punctured, dull and opaque. The males assigned by me to the latter form agree very closely with Saussure's brief description.

25. ELIS (DIELIS) QUINQUEFASCIATA, Fabricius.

Scolia quinquefasciata, Fabr., Spec. Ins., i, 1781, p. 453.

Elis (Dielis) quinquefasciata, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 177 ♂.

RHODESIA: Mashonaland, Salisbury 5000 ft. ♂ (*G. Marshall*); East Loangwa, Petauké 2400 ft. (*S. A. Neave*).

The males of two forms, probably new, are also contained in the collection; but as they are represented each by only one specimen, and these not in the best condition, I have failed to identify them and do not like to describe them as new.

26. *ELIS* (TRIELIS) *PARDALINA*, Gerstaecker.

Scolia pardalina, Gerst., Monats. Acad. Berlin, Nov. 1857; id. Mém. Acad. Berl., 1858, p. 495, pl. 31, fig. 11 ♂.
Elis (*Trielis*) *pardalina*, Sauss. and Sich., Cat. Spec. Gen. Scol., 1864, p. 148 ♂.

PORT EREL* ♀ (*Coll. W. W. Saunders*). ZAMBEZI ♂ (*S. A. Neave*).

The ♀, of which there is a single specimen only, very closely resembles *Elis* (*Dielis*) *clotho*, Sauss., but the wings are hyaline with a fuscous subapical cloud on the forewing, and that wing has also three cubital cells and two recurrent nervures.

27. *MYZINE RUFONIGRA*, form n.

RHODESIA: Bulawayo: Sept. 9, 1905 (*F. A. Dixey*).

♂. Dull black, covered with long, soft, somewhat woolly, white hairs which are most dense on the front of the head and on the thorax posteriorly; the mandibles, clypeus, a spot above the base of the antennae, transverse medially interrupted narrow bands on the anterior and posterior margins of the pronotum, the tegulae, the tibiae and tarsi above, the femora beneath, and transverse narrow bands on the 3rd-6th abdominal segments above pale somewhat greenish yellow; the yellow on the tibiae and tarsi of the anterior and intermediate legs is continued on the underside and the transverse yellow bands on the abdominal segments are each anteriorly emarginate laterally; basal two abdominal segments blood red. Wings hyaline. Head, thorax and abdomen minutely and somewhat sparsely punctured, the median segment posteriorly, and the

* "Port Erel" was Col. Bingham's reading of W. W. Saunders' handwriting on the label. It seems to me more like "Port Wel," a possible contraction of "Port Welcome"; but my friend Prof. A. J. Herbertson has not been able to find that either is known to geographical science.—E. B. P.

basal abdominal segment above smooth, polished and shining, anal up-curved spine black and shining.

Length ♂ 14. Exp. 20 mm.

Described from a single example.

Family POMPILIDAE.

1. POMPILUS VIATICUS, Linn., VAR. NIGRIPENNIS, Tournier.

Sphex viatica, Linn., Syst. Nat., Ed. 10, i, 1758, p. 570;
Fabr., Syst. Ent., 1775, p. 349.

Pompilus viaticus, Fabr., Ent. Syst., Suppl., 1798, p. 246,
et Auct.

Pompilus viaticus, var. *nigripennis*, Tournier, l'Entomologiste Gènevois, 1889, p. 198.

RHODESIA: Loangwa 1700 ft. ♀ (*S. A. Neave*).

This form of the common *P. viaticus*, Linn., seems to be more or less widely spread in Africa. Tournier records it from Tangier and Morocco, and there is a ♂ in the collection of the British Museum from West Africa.

2. POMPILUS NATALICOLUS, Dalla Torre.

Pompilus natalicolus, Dalla Torre, Cat. Hym., viii, 1897,
p. 304.

Pompilus fervidus, Smith, Descr. New sp. Hym. B.M.,
1879, p. 145 (nec. Smith, 1873).

NATAL: Estcourt 4000–5000 ft. ♀ (*G. Marshall*).

3. POMPILUS FESTIVUS, Klug.

Pompilus festivus, Klug, Symb. Phys., 1834, pl. 38, fig. 8 ♂.

NATAL: Estcourt 4000–5000 ft. ♂ ♀ (*G. Marshall*);
RHODESIA: Mashonaland, Salisbury 5000 ft. ♂ (*G. Marshall*).

Described first from Arabia.

4. POMPILUS JACENS, form n.

RHODESIA: Mashonaland, Salisbury 5000 ft.; Oct. 1899
(*G. Marshall*).

♀. Black; the palpi, mandibles, labrum, clypeus, sides of the face, a line along the inner and outer orbits meeting on the vertex, the antennae, the sides of the mesonotum broadly; the tegulae, the

apices of the coxae, the trochanters, femora, tibiae, and tarsi orange red, a broad transverse yellow band on the posterior margin of the pronotum spreading on to the anterior margin of the mesonotum in the middle, an elongate stain on the posterior tibiae and the anterior and intermediate tarsi also more or less washed with pale yellow, apical segment of abdomen above white; wings hyaline forewing fuscous at apex, veins testaceous. Head as broad as the thorax convex in front remarkably flat posteriorly, in appearance like the half of a pea; mandibles bidentate at apex, labrum triangular, clypeus anteriorly arched, raised in the middle by a strong transverse carina, that has a sharp vertical carina impinging on it in the middle, the latter carina is continued upwards between the base of the antennae to the forehead; ocelli in a triangle on the vertex, antennae comparatively short, robust, moniliform, eyes large, their inner margins parallel. Thorax very long, a third as long again as the abdomen; pronotum rounded anteriorly and at the shoulder, its posterior margin arched; mesonotum very slightly convex, scutellum elongate triangular and laterally strongly compressed, median segment evenly rounded posteriorly and obliquely sloped, a broad very ill-defined longitudinal furrow to apex; wings: forewing the radial cell large pointed at apex, the medial and submedial cells of the same length, the basal and 1st transverse subbasal nervures therefore interstitial, 1st cubital cell about as long as the 2nd and 3rd united, 2nd cubital cell quadrate receiving the 1st recurrent nervure about three-fourths of its length from base, 3rd cubital cell trapezoidal, measured along the cubital nervure below it is about twice the width it is at top; hindwing the cubital nervure originates before the apex of the submedial or anal cell, the cubital nervure at origin therefore not interstitial with the transverse anal nervure. Legs short, stout, cylindrical, spines large and stout, intermediate inner tibial calcar four-fifths, posterior inner tibial calcar three-fourths as long as their respective metatarsi, claws of fore tarsi bifid, of intermediate and posterior tarsi toothed beneath. Abdomen short and stout. Head, thorax and abdomen dull and opaque covered somewhat sparsely with short erect pale hairs, these are white and silvery at the apex of the median segment and are there longer and denser.

Length ♀ 9. Exp. 21 mm.

Described from a single example.

5. *POMPILUS VINDICATUS*, Smith.

Pompilus vindicatus, Sm., Cat. Hym. B.M., iii, 1855,
p. 142 ♀.

NATAL ♀ (Coll. W. W. Saunders); RHODESIA :
Mashonaland, Salisbury 5000 ft. ♀ (G. Marshall).

6. POMPILUS IRIDIPENNIS, Smith.

Pompilus iridipennis, Sm., Desc. New sp. Hym., 1879,
p. 144 ♀.

NATAL ♀ ♀ (Coll. W. W. Saunders).

This form, which is not to be confounded with *Pompilus* (*recte Salix*) *iridipennis*, Smith (Jour. Linn. Soc., 1858, p. 98), is very closely allied to *P. vindicatus*, Smith, differing from it in the broader and longer median segment which is also more rounded above. In *P. vindicatus*, the median segment is laterally compressed so as to form a slight longitudinal hollow on each side above.

II. *South African and Australian Aculeate Hymenoptera in the Oxford Museum.* By the late Col. C. T. BINGHAM, F.Z.S.

[Read May 3rd, 1911.]

THE following paper forms the concluding section of the lamented author's memoir published in these Transactions for 1911 (No. XXII, p. 528). When the proofs of this memoir were received from the printers, it was realised that the concluding portion was wanting. Publication could not well be delayed, and the paper appeared with the introductory note adjusted to suit the circumstances. The missing manuscript—misaid as the result of a curious accident—having been lately recovered, it is obviously desirable that the memoir should be completed as soon as possible, and that its second part should appear in as close proximity as possible to the first.

The following paper contains the description of one Aculeate captured by Dr. F. A. Dixey, and four by Dr. G. B. Longstaff, in South Africa in 1905. It also includes descriptions of five Australian Aculeates in the Hope Collection. I had long been interested in the peculiar types of synaposematic pattern found in all large groups of Australian Aculeates, and reproduced in many non-Hymenopterous mimics. Col. Bingham very kindly determined the species in an illustrative collection, and wrote the following descriptions of those which were new to science.

The types of all descriptions are in the Hope Department of the Oxford University Museum.

In this, as in the first part of the memoir, I have acted under the kind and skilled advice of Mr. Rowland E. Turner.

E. B. POULTON.

Family SPHEGIDAE.

1. *CERCERIS CUCULLATA*, sp. nov.

N. AUSTRALIA: Port Essington.

♂. Black, the front of the head below the base of the antennae, the scape, a spot behind the eyes, a spot on each side of the pronotum, the scutellum and postscutellum, a spot on each side of the

TRANS. ENT. SOC. LOND, 1912—PART II. (OCT.) CC

median segment, the legs, the base above of the 2nd abdominal segment and the whole of the 4th and 6th segments, chrome yellow; the basal two-thirds of the mandibles and the underside of the basal three or four joints of the flagellum fulvous. Head thorax and abdomen finely punctured, rugose and opaque. Head broad transverse above, broader than the thorax. Thorax subglobose, the enclosed space at the base of the median segment smooth triangular convex, and divided medially by a broad longitudinal furrow. Abdomen elongate narrower than the thorax, the basal segment subpetiolate, the constrictions between the segments well-marked; pygidial area flat, punctured and laterally margined. Wings hyaline slightly infusate towards the apex.

Length ♂ 11 mm. Exp. 23 mm.

Described from a single example.

Nearest to *C. australis*, Saussure, but the enclosed space at the base of the median segment of *C. australis* is closely punctured like the rest of the median segment; the punctuation of the abdomen much coarser and the distribution of the black and yellow colours especially on the abdomen quite different.

2. GORYTES AUSTRINUS, sp. nov.

Locality doubtful. The specimen originally belonged to Prof. Westwood's private collection and it bears in pencil the following words written by him: "N. H. Hunter's R. or V. D. L. [Horsley]." The Australian type of pattern suggests that the first-named locality is correct. "N.H." stands for "New Holland."

♀. Black, the clypeus pale yellow, the scape and basal joint of the antennae, the pronotum, the tegulae and a short broad line on the mesonotum above them, the scutellum, postscutellum, legs, basal abdominal segment a small spot on either side of the 2nd, the apical margins broadly of the 3rd to the 5th and the whole of the apical segment orange red; the coxae and femora of the legs variegated with black; wings fusco-hyaline darkening towards the costal margins of the forewings. Head above and the thorax somewhat coarsely punctured, rugose and pubescent, abdomen pubescent, the apical margin of the 1st segment widely emarginate in the middle above, the apical three segments strongly curved downwards, a well-marked constriction between the basal two

segments. Legs stout and powerful, the tibiae furnished with strong spines.

Length ♀ 13 mm. Exp. 26 mm.

Described from a single example.

NOTOGONIA DIXEYI, form n.

NATAL: The Bluff, near Durban: Aug. 16, 1905 (*F. A. Dixey*).

♀. Black, the scape of the antennae, and the tarsi of the legs dull red, the claw-joint of the latter more or less blackish above; on the anterior legs the red spreads to the apex of the tibiae. Head, thorax (except the median segment), and abdomen smooth unpunctured; on the head the inner orbits of the eyes and the sides of the clypeus clothed with dense golden pubescence, very rich and shining in certain lights; wings fuscous with a rich purple effulgence; the apical margins of the abdominal segments above with transverse, minutely pubescent, whitish narrow bands; pygidial area well defined covered with stiff black hairs. Head: the anterior margin of the clypeus with a few coarse punctures; the flagellum of the antennae dull and opaque, 2nd and 3rd joints subequal, each twice the length of the basal joint. Thorax: massive, the mesonotum slightly convex, with a short longitudinal carina on each side above the tegulae; median segment long rounded above, finely, but irregularly, transversely striate, abruptly truncate posteriorly, the apex above slightly projecting in the middle above at the edge of the truncation; legs with strong short spines on the tibiae and tarsi, the tibial calcaria long, on the posterior tibiae as long as the basal joint of the tarsi, claws long and curved. Abdomen short, not longer than the thorax, moderately massive, basal ventral segment with a preapical, transverse, strongly marked groove, 2nd segment with a basal broad shallow depression on each side of a bluntly raised medial carina that does not extend to its apical margin.

Length ♀ 16 mm. Exp. 26 mm.

Described from a single example. Figured in Dr. Longstaff's "Butterfly Hunting in Many Lands," Plate II, fig. 4 (1912).

NOTE.—The name given in the manuscript of this memoir was "*rafra*," but a label on the type specimen records "*dixeyi*," and not "*rafra*." Dr. Longstaff tells me that he knew of Col. Bingham's intention to alter his MSS. to "*dixeyi*."—E. B. P.

Family EUMENIDAE.

ODYNERUS LONGSTAFFI, form n.

CAPE COLONY: Creek on the Buffalo River, near East London: Sept. 28, 1905 (*G. B. Longstaff*).

♂. Dull red, base of the mandibles, the clypeus, the front immediately above it, the inner orbits of the eyes from the base of the clypeus to the middle of the emargination in the eyes, a line along the scape of the antennae in front, a transverse band along the apex of the postscutellum, two obliquely placed oval spots one on each side on the middle of the basal abdominal segment, two larger spots one on each side at the base of the 2nd segment, and transverse preapical bands on the 2nd and 3rd segments bright yellow; a cone-shaped large patch above the clypeus extends up to the vertex including the ocelli, the mesonotum and the middle of the posterior face of the median segment, black, the mesonotum with a central, short, longitudinal red line. The red of the antennae and legs is of a paler tint verging on orange, the tibiae and tarsi of the latter still paler. Wings flavo-hyaline, the radial cell and terminal edge of the forewings lightly fuscous. Head above, pro- and mesonotum, scutellum, postscutellum and median segment very closely and finely punctured. Head: the clypeus slightly convex, its posterior and side margins above rounded, the sides below straight, inclined obliquely inwards, the apex truncate and circularly emarginate; emargination of the eyes deep; antennae slender, circularly curled at their apices; head from above transversely rectangular, broader than long and as broad as the thorax. Thorax massive, the median segment short, its posterior face concave with a slender groove down the middle, posteriorly the sides are rounded, and tuberculate or subdentate in the middle. Abdomen: sessile, basal segment campanulate, slightly strangled before the apex, 2nd segment as broad as long; 7th broadly rounded posteriorly and fringed with brown hairs.

Length ♂ 13 mm. Exp. 26 mm.

Described from one example in the British Museum and one at Oxford: figured in "Butterfly Hunting in Many Lands," Plate II, fig. 6.

Comes nearest to *O. mutans*, Sauss., from Senegambia, which however has two tubercles between the antennae, the median segment transversely striate, the apical margin

of the basal abdominal segment angulated posteriorly and bears transverse yellow bands on the 1-4 abdominal segments.

ODYNERUS DECORATUS, sp. nov.

W. AUSTRALIA: Towranna Plains between Yule River and Sherlock River: Jan. to May, 1898 (*R. Clement*).

♂. Lemon yellow, the mandibles, the bases of the antennae, the apex of the scape, the flagellum, a large square mark on the vertex surrounding the ocelli and reaching the upper margin of the eyes on each side, a square mark on the collar, the mesonotum, scutellum and postscutellum, an oblong mark on the 2nd abdominal segment, the base of the 4th and 5th narrowly and the apical two segments black, a spot at the base of the mandibles, two minute spots on the vertex at the upper angles of the eyes, a square mark at the base of the mesonotum, a transverse mark on the scutellum divided medially by a fine black line and the middle of the postscutellum yellow. Head, thorax and abdomen punctured rugose and covered with a minute, short, silky pubescence; clypeus pyriform truncate at apex; prothorax vertically truncate in front, almost concave, the pronotum margined anteriorly; mesonotum slightly convex, scutellum and postscutellum not prominent, median segment rounded at the sides, the apex slightly concave. Wings hyaline brown along the costal margin, nervures brown, tegulae yellow with a faint brown spot in the middle. Abdomen massive, sessile, longer than the head and thorax united, the apical margin of the 2nd segment crenulate,

♀. Similar to the ♂ but in the two specimens before me the ground-colour is reddish (in one specimen certainly, and in the other probably darkened by cyanide). It differs in being larger and more strongly built than the ♂ and has the apical two abdominal segments reddish brown, not black: the shape and character of the black markings however are very similar.

Length ♂ 10 mm.; ♀ 11.5 mm. (to apex of second abdominal segment). Exp. ♂ 23 mm.; ♀ 27 mm.

Described from a single example of each sex.

Belongs to Saussure's subgenus *Lionotus*.

I have preferred to give a full description of the ♂ rather than of the ♀ because, as noted above, I consider the ground-colour of the two female specimens I have before me altered by cyanide.

RHYNCHIUM NIGROLIMBATUM, sp. nov.

W. AUSTRALIA : Towranna Plains : 1898 (*Clement*).

♀. Chrome yellow, the head above and the 2nd abdominal segment black, the clypeus, the front below the anterior ocellus extending into the emargination of the eyes, and the antennae chrome yellow, mandibles reddish yellow ; wings dark fuscous purple, hyaline along their posterior margins. Head above closely and coarsely rugose punctate, the punctures on the front in certain lights running into striae, clypeus sparsely and very shallowly punctured almost smooth, the apex transversely truncate not emarginate, eyes large reaching the base of the mandibles ; these latter coarsely longitudinally striate and punctured. Thorax longer than broad finely punctured, the prothorax vertically transversely truncate anteriorly, mesonotum convex, scutellum and postscutellum flat, the former almost square the latter transverse, both separated from the mesonotum anteriorly, from each other, and from the median segment posteriorly by well-marked transverse sutures ; median segment long, concave posteriorly bearing a medial fine longitudinally impressed line, and with the lower posterior angles somewhat produced. Wings ample, the 2nd cubital cell in the forewing trapezoidal receiving both recurrent nervures ; legs short slender pubescent, claws unidentate. Abdomen massive, the basal segment narrow, beneath with a triangular depression and a subapical transverse groove, above convex and rounded ; 2nd segment elongate broadening posteriorly.

Length ♀ 14 mm. (to apex of 2nd abdominal segment). Exp. 30 mm.

Described from a single example.

ALASTOR ABNORMIS, sp. nov.

W. AUSTRALIA : Towranna Plains : 1898 (*Clement*).

♂. Orange yellow, head and the 2nd abdominal segment black, the clypeus, a mark somewhat in the shape of a chess pawn above it on the front, and the scape in front orange yellow ; wings fuscous, hyaline along the posterior margins. Head from above transverse as broad as the thorax, closely and somewhat coarsely rugose punctate above and behind the eyes more finely and sparsely punctured on the front and clypeus, the latter covered with a fine silky short white pubescence, somewhat pyriform with the apex truncato-emarginate. Front with the orange macula raised carinate. Eyes large reaching to the base of the mandibles, mandibles long toothed on the inner margins. Antennae subclavate somewhat like that of

Masaris. Thorax broad and rounded coarsely punctured, the prothorax vertically truncate anteriorly, the pronotum margined in front; mesonotum convex; scutellum and postscutellum raised gibbous separated from the mesonotum in front from each other and from the median segment by well-marked sutures; median segment very short somewhat suppressed under the scutellum and postscutellum, the sides rounded not produced posteriorly. Wings ample, the 2nd cubital cell of the forewing petiolate; legs stout pubescent, claws unidentate. Abdomen sessile the 1st segment somewhat compressed and campanulate posteriorly, 2nd segment long broadening gradually from front to back.

Length ♂ 12 mm. (to apex of 2nd abdominal segment). Exp. 27 mm.

Described from four examples.

This remarkable and handsome species may afterwards have to be separated generically. I have seen only four males, and they are strikingly aberrant, differing from all known wasps, fossorial or social, in having *only 9 joints in the antennae*. The closest scrutiny under a microscope reveals no more than 9 joints, the apical joint being exceedingly small and sunk in the apex of the subapical joint.

There can be no question of the insect belonging to the *Diploptera*; and in the rest of its structure, particularly in the venation of the forewing, it closely resembles *Alastor* under which genus I have provisionally placed it.

ANTHOPHILA.

Family COLLETIDAE.

PROSOPIS SIMPLEX, form n.

CAPE COLONY: Queen's Park, East London: Sept. 26, 1905 (*G. B. Longstaff*).

♀. Black immaculate, the tibiae and tarsi turning to slightly reddish brown, the flagellum of the antennae except the basal joint, beneath maroon. Head and thorax closely but not very coarsely punctured, the abdomen smooth and slightly shining in certain lights, but not polished. Head broader than the thorax, flat in front, clypeus large, broad, anteriorly truncate antennae short, robust, their apices roundly blunt. Thorax: pronotum transverse, forming a mere narrow ridge; mesonotum convex with an anterior medial and a lateral, impressed, short longitudinal line which are short and shining;

median segment compressed posteriorly, the apex truncate, the face of the truncation crossed by a vertical, well-marked carina and bordered on each side by similar carinae, the basal concavity on the segment lunate and edged anteriorly and posteriorly by a series of large punctures or pits ; wings hyaline, slightly fuscous, legs slender, minutely pubescent. Abdomen about as long as the head and thorax united, the 2nd segment with traces on each side of a fringe of white hairs.

Length ♀ 5 mm. Exp. 9 mm.

Described from a single example.

Easily distinguishable from all described forms of *Prosopis* by the sculpture and by its uniform black colour entirely devoid of yellow markings.

Family APIDAE.

HALICTUS INORNATUS, form n.

CAPE COLONY : Zwartkops, near Port Elizabeth : Aug. 11, 1905 (*G. B. Longstaff*).

♀. Dull black, covered with soft long reddish-brown erect hairs, the 2nd to the 5th abdominal segments with lateral transverse short bands of whitish-yellow pubescence at their bases, the anal rims ferruginous, the legs covered with yellowish pubescence which turns to ferruginous on the inner side of the posterior metatarsi, the tibial calcaria of the posterior legs yellowish-white at base, ferruginous towards their apices, the claw joint and claws of all the tarsi ferruginous. Head as broad as the thorax, flat in front, closely punctured, the clypeus slightly convex transversely and broadly truncate anteriorly. Thorax more sparsely and finely punctured, the depressed area at base of the median segment lunate and very closely punctured, the punctures running into longitudinal striae. Abdomen very minutely and sparsely punctured, shining above.

Length ♀ 10 mm. Exp. 18 mm.

Described from a single example.

CERATINA VITTATA, form n.

ORANGE RIVER COLONY : "Wonderboom," near Pretoria : Aug. 31, 1905 (*G. B. Longstaff*).

♀. Black, two large coalescent spots on the labrum, a very broad L-shaped mark on the clypeus and a narrow line on the front of

the anterior tibiae pale yellow; the humeral angles of the pronotum and transverse laterally broadened bands on the 2nd to the 5th abdominal segments fringed with short stiff white hairs. Head, thorax and abdomen very closely and uniformly punctured and granulate. The median segment of the thorax is very short abruptly sloped downwards from the postscutellum, the usual depression at the base of the segment very ill-defined, scarcely perceptible. Abdomen stout and comparatively massive, the 6th segment with a sharp longitudinal carina towards apex. Wings hyaline, nervures and tegulae dark brown.

Length ♀ 7 mm. Exp. 12 mm.

Described from a single example.

Stone

vol. 18, 1911-13

SMITHSONIAN INSTITUTION LIBRARIES



3 9088 01268 4833